

# The Iron Age

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A Review of the Hardware, Iron and Metal Trades.

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**The Springfield Traction Engine.**  
We take pleasure in presenting on this page and also on page 17, engravings of a traction engine built by the Springfield Engine and Thresher Company, of Springfield, Ohio. One of the main features of the engine is found in the driving axle, shown in Fig. 2. The gearing is there represented in combination with a spur-wheel L and countershaft N, representing the outlines of the boiler. The traction wheels are taken off the axle to show the gearing and clutches more distinctly. The compensating gear consists of two bevel-wheels, G and K, and three bevel pinions, H. The bevel-wheel G is keyed rigidly to the axle C. The bevel-wheel K drives the left-hand traction-wheel, which turns loosely on the axle C. The clutch M is also keyed rigidly to the axle C. The square steel pins A (which are shown by the dotted lines) are even with the inside of the flange of the bevel-wheel K, but on stony or slippery

on this circular plate I and the center frame F, and if the springs were removed would turn loosely on said plate and frame. There are six springs inside the spur-wheel D connecting the spur-wheel with the center frame F. Three of these springs are compressed when the wheels are

A pinion which is on the end of the engine shaft drives the spur-wheel on the counter-shaft. On the opposite end of this counter-shaft is the pinion L. This pinion L drives the wheel D, which is connected by springs to the center frame F. This frame is driven by springs through the wheel

is slid in from one end of the axle and the cast-iron end piece K is slid in from the other end of the axle and are joined and bolted together as shown in cut. These castings J and K have lugs on each side. On the front side the lugs are to receive the tongue in case the engine

going over obstructions or uneven ground. The cylinder casting E is bolted to the boiler, and has two square lugs M cast on the opposite sides of the inside. These lugs M fit in recesses cast in the ball and socket D to slide up or down as the movement of the springs may be, and at the same time keep the ball and socket D from turning, so that there is no strain put on the spring but a central compression. The screw G is loosened when the engine is on the road, but when the engine is set for threshing or to furnish power to run machinery this screw G is screwed up and takes the weight of the boiler off the spring A. There is an opening between the box J and the ball and socket-piece C to receive the "push and pull" rod I. One end of this pull rod I receives the king-bolt B, and the other end receives a casting, P. This casting fits loosely around the rod I on one end, and on the other fits loosely over a wrought-iron brace, Q, and is connected with it by a pin, T. The wrought-iron brace Q is bolted on each end

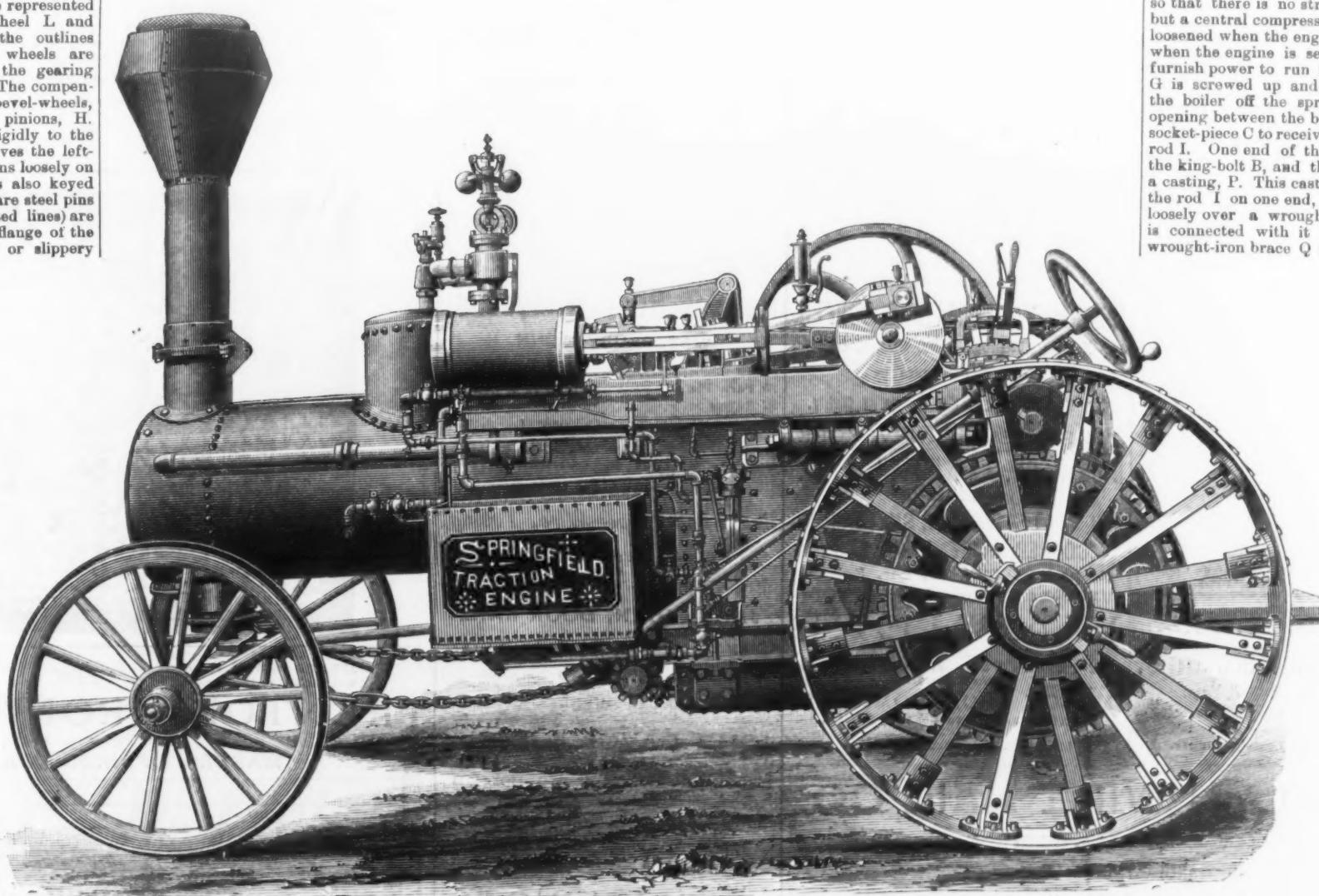


Fig. 1.—General View.

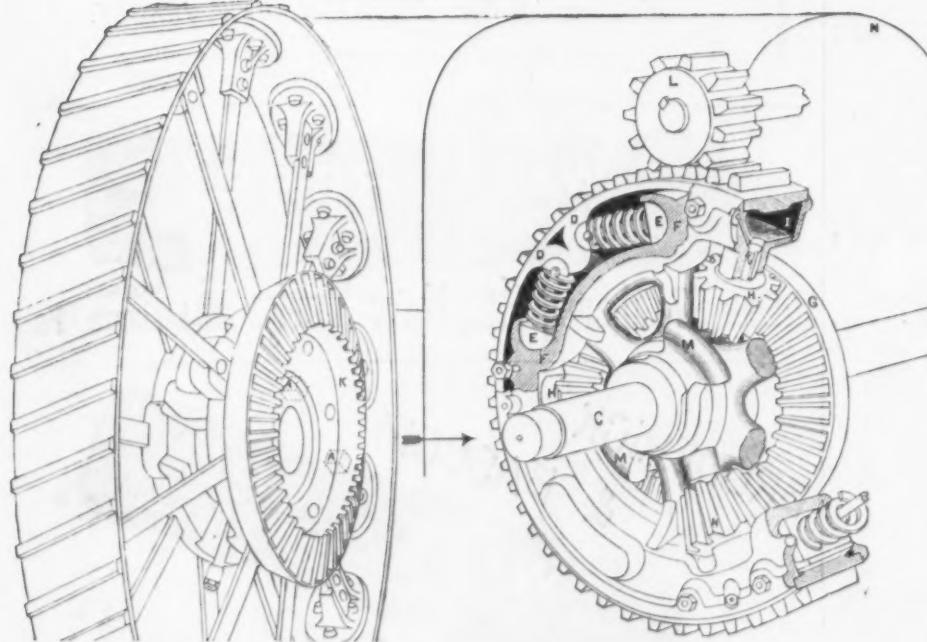


Fig. 2.—Gearing of Driving Axle.

TRACTION ENGINE, BUILT BY THE SPRINGFIELD ENGINE AND THRESHER COMPANY, SPRINGFIELD, OHIO.

(For Fig. 4 see page 17.)

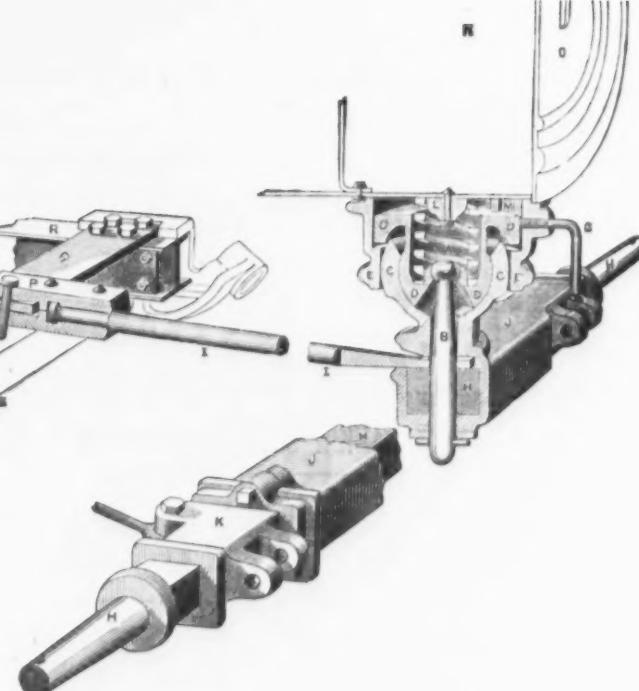


Fig. 3.—Details of Front Axle.

roads, where it is necessary to have both wheels rigid, these pins are connected with the clutch M, by moving in as far as shown by the dotted lines by means of a half turn of the worm plate, which is shown on the outside of the traction-wheel in Fig. 1.

The three bevel pinions H have each a journal, J, at each end, which is allowed to turn loosely in the babbitt boxes of the center frame F. This center frame F is, as partly shown in section, between the two bevel wheels G and K, and has an eye on its center, which is allowed to turn loosely partly on the hub of the bevel-wheel G and the other part on the hub of the clutch M. A circular plate, I, is held in a central position by shoulders on the center frame F, and is bolted to the same. The spur-wheel D rests

driven forward, and the other three springs are compressed when the wheels are driven backward. These springs make an elastic connection between the spur-wheel D and the center frame F, and have a circular trunnion, E, on which it turns loosely in the journals of the center frame F and the spur-wheel D, making the compression of the springs always central. The right-hand traction-wheel is also loose on the axle C, and is driven by two steel pins B. The two pins B are driven from a clutch which is keyed rigidly to the axle C.

When the engine is to be pulled by horses, these two pins are withdrawn from the clutch by means of handles on the outside of the traction-wheel. This enables the horses to pull the engine with ease.

driven by the three bevel pinions H. These three pinions mesh on one side with the bevel-wheel K. The bevel-wheel G being rigid on the axle, drives the right-hand traction-wheel and the bevel-wheel K drives the left-hand traction-wheel. In running the engine in a straight line, the bevel pinions H act as simple drivers on the bevel-wheels G and K, but being connected loosely, they enable the engineer to turn the engine at any desired angle by means of the steering attachment.

Fig. 3 represents the front axle in connection with the frame work R; N represents the boiler; O the smoke-box door. The axle H is a solid wrought-iron forging with a hole in the center for the king bolt B. The axle collars are removed and a cast-iron box, J,

should be drawn by horses, and on the other side the lugs receive the ends of the chains which connect the front axle to the steering chain shaft S. The cast-iron box J also has a ball and socket-piece, C, on the upper side. This ball and socket-piece C receives another ball and socket D which carries the spring A. On the inside, this spring A rests with one end on the ball and socket D, and on the other carries the boiler N. A little casting, L, which is riveted to the boiler, keeps the spring A in a central position all the time. This ball and socket joint enables the axle H to turn around the center of the king bolt B far enough to allow the engine to turn in a small space. It also allows either of the front wheels to be raised or lowered 20 inches in

to the main frames R. The steering-chain shaft S is in a journal on one end, which is bolted to the right-hand main frame and the other end goes through a journal on the left-hand main frame R. On this the worm wheel is keyed and is geared to the worm on the hand-wheel shaft, as shown in Fig. 1. It will be noticed that the total strain produced by the pushing and pulling of the front axle is nearly all on the main frames R. There is but very little strain on the boiler through the cylindrical piece E, which has nothing to do but to steady the top piece C and to hold the hand screw A in its place.

No matter in what position the front

(Concluded on page 17.)



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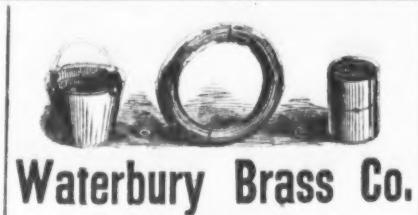
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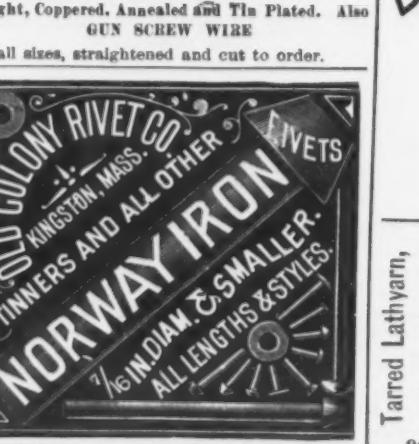
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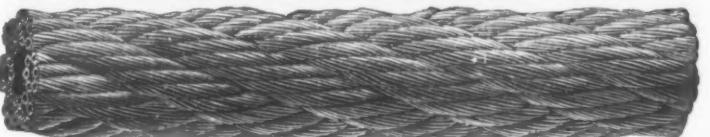
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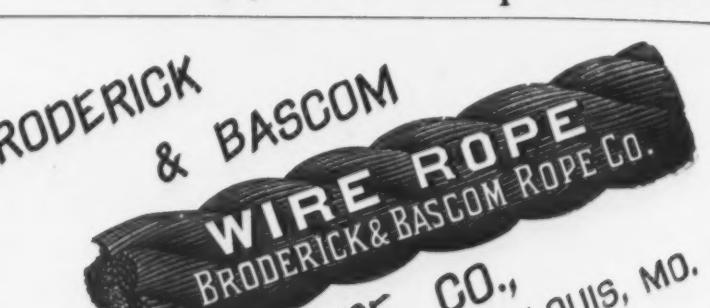
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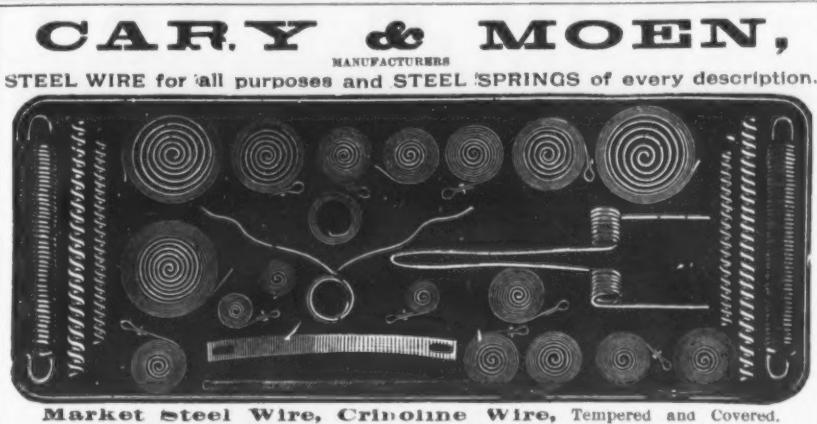
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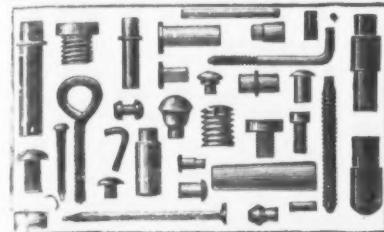
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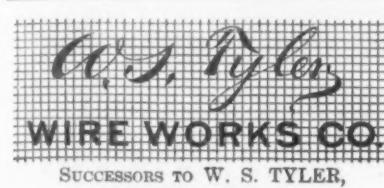
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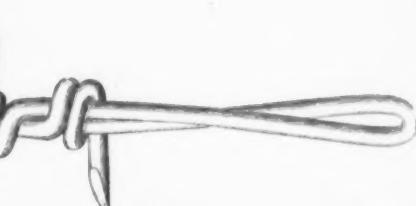
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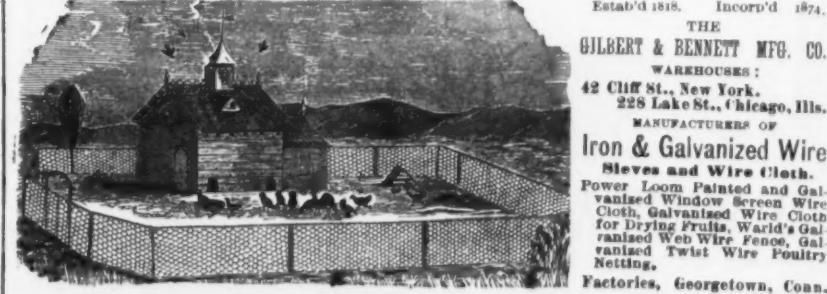


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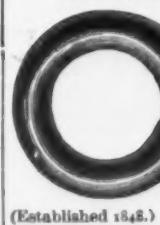
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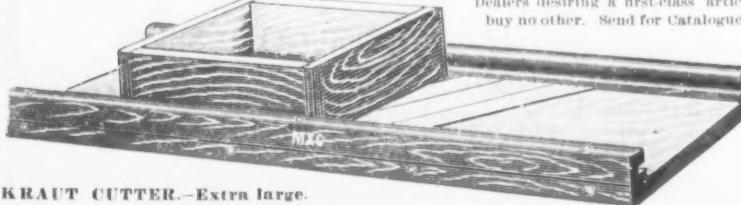
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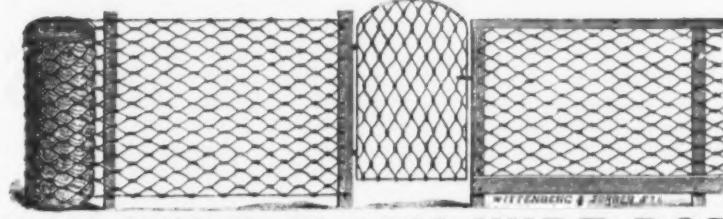
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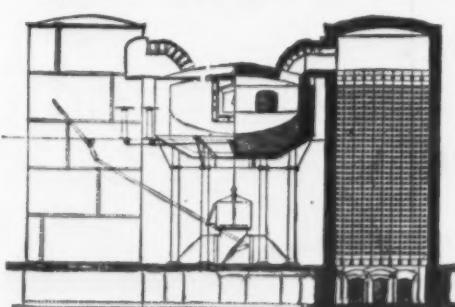
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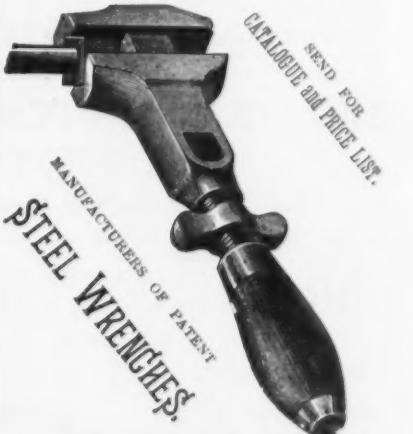
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This Knife is the **BEST IN USE** for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat & ditching marshes. The blade is **Best Cast Steel**, spring temper, easily sharpened, and giving **universal satisfaction**. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and it seems destined to take the place of all other Hay Knives. They are nicely packed in boxes, 1 dozen each of 60 pounds weight, suitable for shipping by land or water to any part of the world.

**Manufactured only by** HIRAM HOLT & CO., EAST WILTON, Franklin Co., MAINE. For sale by the Hardware trade generally.

**CAUTION.**

We are informed that various parties are infringing upon the widely-known Letters Patent granted originally to GEORGE F. WEYMOUTH for an improved Hay Knife. The invention patented to GEORGE F. WEYMOUTH is embodied in a sword-shaped blade provided with operating handles for working the same, the edge of the sword-blade being furnished with knife-edged serrations or teeth. **It is our purpose to PROSECUTE ALL INFRINGERS** and to hold them responsible to the extent of our assessment of the damages, and to prevent any manufacture and sale of knives infringing upon the patent, or any deal in them. Several suits are now pending in the U. S. Courts. **All manufacturers and dealers are hereby warned** of our rights, and the public are cautioned against purchasing any Hay Knives, made as described above, which are not of our genuine manufacture.

EAST WILTON, Sept. 1, 1886.

**North Wayne Tool Co.,**  
HALLOWELL, MAINE,



W.H. CARTER'S PATENT NEEDLE HAY KNIFE.

PAT. APR. 29, 1884.

IMPROVED BY M.M. BARTLETT.

Improvement Patented April 29, 1885.

**SOLE MANUFACTURERS OF NEEDLE HAY KNIFE,** THE BEST IN THE WORLD.

Patented April 29, 1884.

Improvement patented April 29, 1885, of which we are the sole manufacturers, has been tested with the most celebrated knives of other makers, and has proved an easier and faster cutter than any other. Its special excellence consists in the chisel edge tooth shown in the engraving. It can be used for cutting hay, straw, or bale, for ditching, cutting peat, or any other work for which a hay knife is used. It can be readily ground by the most inexperienced, as it requires to be ground only on one side. Should a tooth break, all that is necessary to replace the damage is to grind it once and a new chisel-tooth appears. It can ordinarily be sharpened with a common scythe stone. Try one and you will give it the preference.

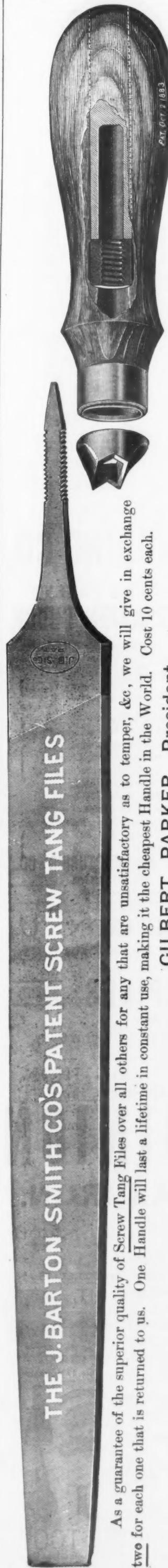
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**RAZOR STROPS,** Rochester, N. Y.



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As a guarantee of the superior quality of Screw Tang Files over all others for any that are unsatisfactory as to temper, &c., we will give in exchange two for each one that is returned to us. One Handle will last a lifetime in constant use, making it the cheapest Handle in the World. Cost 10 cents each.

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All descriptions of Files made to order. Price List mailed on application. Established 1863.

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MANUFACTURED BY THE  
**CHELSEA FILE WORKS, NORWICH, CONN.**



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Specially Adapted for Use on Wire Fence.

Also Manufacturers of BLACKSMITHS' and MACHINISTS' STOCKS and DIES, PLUG and TAPER TAPS, HAND, NUT and SCREW TAPS, PIPE TAPS and REAMERS.

Price List on Application.

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MANUFACTURERS OF

**THE GEM HAY KNIFE.**

Patented July 29th, 1875. We desire to call especial attention to our patent "Gem" Hay Knives, which are rapidly gaining in favor with the public. They are made from the best Cast Steel, tempered in oil, and their peculiar construction enables the user to do the work with greater ease and rapidity than with any other knife.

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For Coaches, Phaetons, Buggies, Wagons, &c.

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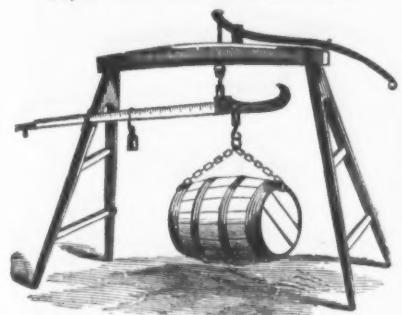
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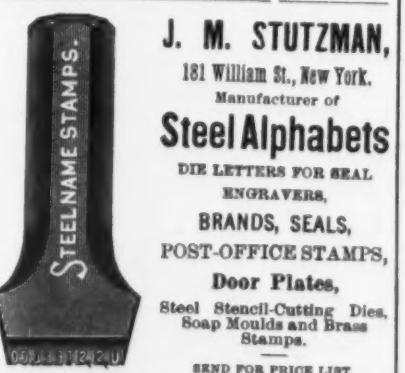
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AIR ENGINE.McKinley Engine Co.,  
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SHOVELS AND SPADES.Forged from a single piece of Cast Steel, without  
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Hog and Pig Ringer.Will close Ring outside nose if so desired. Millions  
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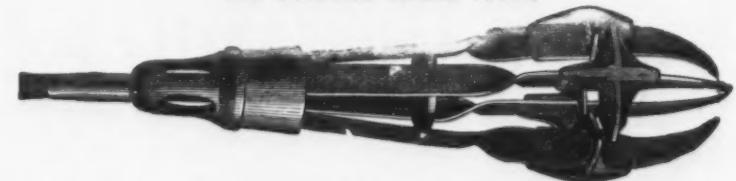
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For Beading, Reeding or Fluting, and for all kinds of light Routering, this tool is invaluable to wood workers. Seven superior steel cutters go with each tool. Both ends are sharpened, thus embracing six ordinary sizes of Beads, four sets of Beads, two Fluters, and a double Router Iron (1/4 and 3/4 inch). The tool is easily cleaned to remove stock. A gauge with long, straight bearing surfaces is used in ordinary work, and a gauge with oval bearing surfaces is used for curved or irregular forms of work. No. 66. Iron Stock, with seven Steel Cutters. \$1.00

THE NATIONAL STEEL TUBE CLEANER,  
FOR CLEANING BOILER TUBES.

ENDORSED BY THE BEST ENGINEERS.

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THE ORIGINAL

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## EMERY WHEELS

Runs Easy and Safe,

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Is More Durable — Hence Cheaper.

A trial will convince you of this.

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TWO SIZES IN  
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## Recent Treasury Decisions.

Certain car-wheel centers, consisting of forgings of iron which have been advanced by other processes of manufacture—being bored out for the fitting of the axle, the hubs faced, and the rims turned and finished with a flange of steel bolted thereon to prevent the tires from slipping, but which are not tired—are held to be dutiable at the rate of 45 per cent. ad valorem, for "manufactures" composed wholly or in part of iron or any other metal, and whether partly or wholly manufactured."

Certain plates of cast iron which, when put together, constituted an ice machine, notwithstanding the fact that some of the parts had undergone a process of boring, polishing and finishing, to render them fit for use as such machine, have been held by the courts in two different suits—one at Chicago and the other at St. Louis—to be "castings of iron," and, as such, to be dutiable at the rate of 1 1/4 cents per pound, and the department, by the advice of the United States Attorney General, has acquiesced in such decision.

On the exportation of tacks and shoe nails manufactured from imported bar steel a drawback will be allowed equal in amount to the duty paid on the imported material used in the manufacture, less the legal retention of 10 per cent.

Certain articles, consisting of a stereotyped press, a stabbing machine and a card-board knife, although imported for the use of a college, are not entitled to free entry, inasmuch as, being part of the outfit of a printing office, they do not come within the scope of the provision in the free list, whereby certain specified articles specially imported for the use of certain institutions are exempt from duty.

"Tungsten metal," which is a substance in the nature of an alloy obtained from wolframite ore, which contains principally the metal, tungsten, and several other metals in various small proportions, and which is imported and used for the purpose of being added in small quantities to steel or iron in order to render the latter metals suitable for the manufacture of tools, is not one of the substitutes for steel contemplated by the provision in schedule, but is dutiable at the rate of 20 per cent. ad valorem, as an unwrought metal not otherwise provided for.

## The Julien Electric Street Car.

At the present time, says the *Stevens Indicator*, few subjects are of more absorbing interest generally than the electric transmission of energy and its application to the driving of machinery, lighting, and to all other purposes where a convenient source of power is desirable. In the matter of traction on street car and elevated railway lines it is natural that electric motors should have received attention at an early stage of development in applied electricity, and the history of what has been accomplished in that field is therefore not without interest.

As the result of more recent investigation the Julien Electric Company, of New York, have brought out an electric street car, designed by Mr. Edmond Julien, with which during the past few months experiments have been made on the line of the New York Eighth Avenue Road. We will say at the outset that Mr. Julien's design embraces the adoption of electric accumulators, which he has made a subject of careful study, and from which, accordingly, he claims to be able to obtain results much superior to those with which we have all become more or less familiar. Mr. Julien, we are told, has succeeded in removing the old objections to the storage battery, and in his improved form of accumulator the plates remain rigid and suffer no distortion. The active material adheres perfectly to the metal plate, due principally to the nature of the alloy employed, and the life of the plates, as demonstrated by several instances, is a long one. After nearly two years' use they are said to have shown no change of form.

The car is of the ordinary street-car pattern, capable of carrying from 70 to 80 passengers, and was built by John Stephenson for the Vienna exposition in 1873.

The accumulators are placed under the seats, and, to facilitate their being handled, the lower panels of the car are made to open. The introduction and removal of the batteries, coupling, examination and all work connected with them can therefore be accomplished from the outside with the greatest ease. The motor and running-gear are placed beneath the car-floor. Under each platform is placed a commutator worked by a hand-lever. These commutators merit special attention. The regulating levers control toothed sectors, each tooth corresponding to a particular grouping of the batteries, and the discharge of each series is effected uniformly at whatever notch the commutator may be set. All the cells can therefore be recharged together. Without this provision the charging of a large number of batteries would be a matter of enormous complication in a regular service. It may be interesting to add that the car is lighted by two incandescent lamps fed by the batteries. The brake is worked by hand. The receiving bench for the accumulators at the terminal station is of the same height as the floor of the car, and it is thus an easy matter to slip the cases containing the batteries underneath the seats. The rate of speed is controlled both by the number of elements and by manipulation of the mechanism. It is noteworthy that Mr. Julien depends in no way upon artificial resistances. The rapidity of movement is controlled by the batteries, and full-speed, half-speed, full-stop and reverse motion are all obtained by the merest turn of the levers. To the commutators are brought the connections of all the sections of the batteries. All the mechanism has been devised so as to be easily operated by men who have had neither electrical nor mechanical training, thus ensuring the employment of men accustomed to the road and to street-car work generally. The motor is a Siemens dynamo, running at about 1000 revolutions per minute, and is belted to an intermediate shaft from which motion is transmitted to the driving axles by a phosphor-bronze chain belt.

A matter of special interest is found in

the claim which is made for the commercial efficiency of the accumulators. This is placed as high as 80 per cent., a figure which has never before been reached in practice, and may even in this case be considered somewhat doubtful. At the Antwerp International Exposition, in 1885, the Julien car was exhibited in practical working with eminently satisfactory results. We have before us the report of the international jury which were appointed at that time to examine into the working of several traction systems, and from it find that that of Mr. Julien was awarded the diploma of honor both on the ground of efficiency and of economy. Experiments in New York are still being continued with Mr. Julien's devices, and the Julien Electric Company promise interesting developments at no distant date.

## The Detroit Bridge.

The project for a winter bridge across the Detroit River has taken definite form. The first stages of the work have been begun. Mr. J. D. Hawks, the Chief Engineer of the Michigan Central Railroad, has drawn plans and is figuring upon an estimate of the cost; Mr. Henry Russell, general attorney of the company, who has been in Washington to bring the matter to the attention of Congress, has now returned. The matter was favorably received by the Treasury Department, the officials saying that with their present information they could find no objection to a winter bridge. It was suggested by the department that there might be objection to allowing a single railroad company to construct a bridge for its own use exclusively, but that a bridge company that would admit all trains of all railroads upon an equal basis of charges might be given the preference. The Michigan Central people said they did not object to that. The Dominion Government, it is understood, have granted authority to bridge the waters of the Detroit River in their jurisdiction. An act of Congress is necessary to complete this authority. Being designed for use only during the winter or the closed season of navigation, the railroad people do not anticipate that there will be any opposition to the bridge. The bridge as planned by Chief Engineer Hawks is to be 2600 feet in length. There are two draws, one 200 feet from the Michigan shore, the other 300 feet from the Canada shore. The draws with spans of 400 feet will give clear waterways of 175 each, or a total of 700 feet. The central span of 400 feet is to be removable, and when taken ashore during the season of navigation and the draws open, there will be five clear passageways for vessels, with an aggregate opening of 1100 feet. All the other spans, except the central one, which is 400 feet, and the one next the Michigan shore, which is 200 feet, are 300 feet long. There are four such spans.

The bridge will be low, not more than 25 feet above the surface of the river. Nine piers of masonry to sustain the spans, and two heavier piers for the pivots of the draws, will be built up from bed-rock at the bottom. The river bed has been surveyed and the formation is known. The water in the deepest part is 40 feet, and will average perhaps 25 feet from shore to shore. There is at the bottom silt and mud of varying depth, in midstream 40 feet, and nowhere less than 15 feet. Then comes hard clay of an average depth of 20 feet—except near the Michigan side, where the depth is 40 or 50 feet. Below that there is about 20 feet of hard pan for a distance of 700 feet from the Canadian shore. The hard pan ceases in the middle of the river, but reappears again 900 feet from the Michigan side, where it is about 15 feet deep. Below the hard pan is the bed-rock which will be the foundation of the piers. The total height of the piers will be 120 feet or thereabouts. The bridge will be wide enough for a double track. It will be of the iron truss pattern, and is expected to cost less than \$1,500,000, including all the approaches.

Utilizing the Water from the Severn Tunnel.—According to the *London Times*, an effort at length is being made to utilize the 14,000,000 gallons of water per day which the Great Western Railway Company are pumping at the Sudbrook Springs, on the Monmouthshire side of the Severn Tunnel, and at present allowing to run to waste, while it costs them nearly a year to pump it into the Severn estuary. The water has been submitted to analysis, and has been declared to be the purest spring water, entirely free from organic matter, and the finest water that could be desired for domestic purposes. The mayor of Bristol presided over a town meeting in favor of a scheme for using this spring as a further water supply for Bristol, by bringing it across the Severn by a tunnel beneath the bed of the river. It was stated that the company formed for this purpose consisted of influential Bristol citizens, and as a desire had been expressed that the corporation should have the control of the water supply of the city, the bill which had been drafted contained a clause enabling the corporation to exercise all the powers of the act on payment of the cost and expense incident to obtaining it, and sums expended by the company in exercise of its powers, with 5 per cent interest.

Cooper & Hewitts recently opened the Bedell Iron Mine, on the northern border of New Jersey. The mine, which is situated in the township of Sparta, is now worked under difficulties, as the ore has to be hauled a long distance by wagon to the nearest railroad station on its way to the Pequannock Furnace, near Belvidere. The proprietors have already begun, however, the building of a branch railroad 4 miles long, connecting the mine with the Lehigh and Hudson River road and the Susquehanna branch of the Delaware, Lackawanna and Western road at Andover Station. When the branch is completed, operations at the mine will be extended on a large and important scale.

The Duluth Board of Trade has issued an interesting volume descriptive of the business of the Zenith City and its facilities.



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DAME, STODDARD & KENDALL,

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FINE FISHING TACKLE  
OF EVERY DESCRIPTION.

SELLING AGENTS FOR

Skinner's Celebrated Fluted Trolling Spoon Baits.

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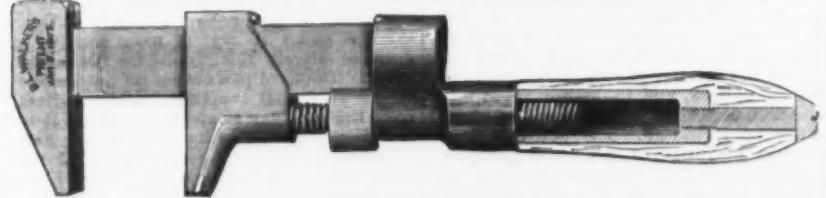
Manufacturers of Lancewood, Greenheart and Bamboo Fishing Rods.

DAME, STODDARD & KENDALL,

Successors to BRADFORD & ANTHONY,

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MANUFACTURERS OF

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These Wrenches are more uniformly in proportion for excessive strain and have a larger opening than any other. The cross strain is very light; the tension or pull comes directly in line with the bearing. The offset in the handle gives additional leverage and does away with the danger attending a top pull with other Wrenches now in use.

All Wrought Bars, Thoroughly Case-Hardened, and every Tool Warranted.

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Clayton Brothers,  
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Manufacturers of Cast Shears,  
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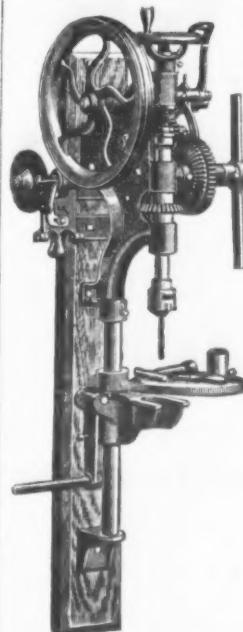
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GEO. H. CREED,

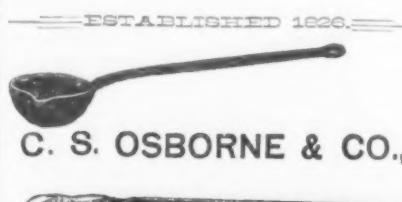
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Manufacturer of and wholesale dealer in Cotton and "Long Flax" Sail Duck, Cotton and Linen Yarns. Creed's Patent Ships' Crews, Hellman's Wire Rope Splicers. Agent for Raymond's American Crane Oil, for lubricating Cylinders and Valves.



GEO. BURNHAM & CO., WORCESTER, MASS.  
Manufacturers of  
BLACKSMITHS' UPRIGHT  
SELF-FEEDING DRILLS  
HAND OR POWERED.  
Patented March 20, 1883, Oct. 23, 1883 and June 16, 1885.  
Durable Workmanship. Latest Improvements.  
Send for Illustrated Price List.



NEWARK, N. J. STANDARD Manufacturers of PLUMBING TOOLS. Send for Price List. Ask your dealer for our make and take no other.



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MANUFACTURERS OF  
Sleigh, Hand, House, Tea and Call Bells  
in great variety.  
Illustrated catalogue on application.  
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Where a Complete Stock is Maintained.

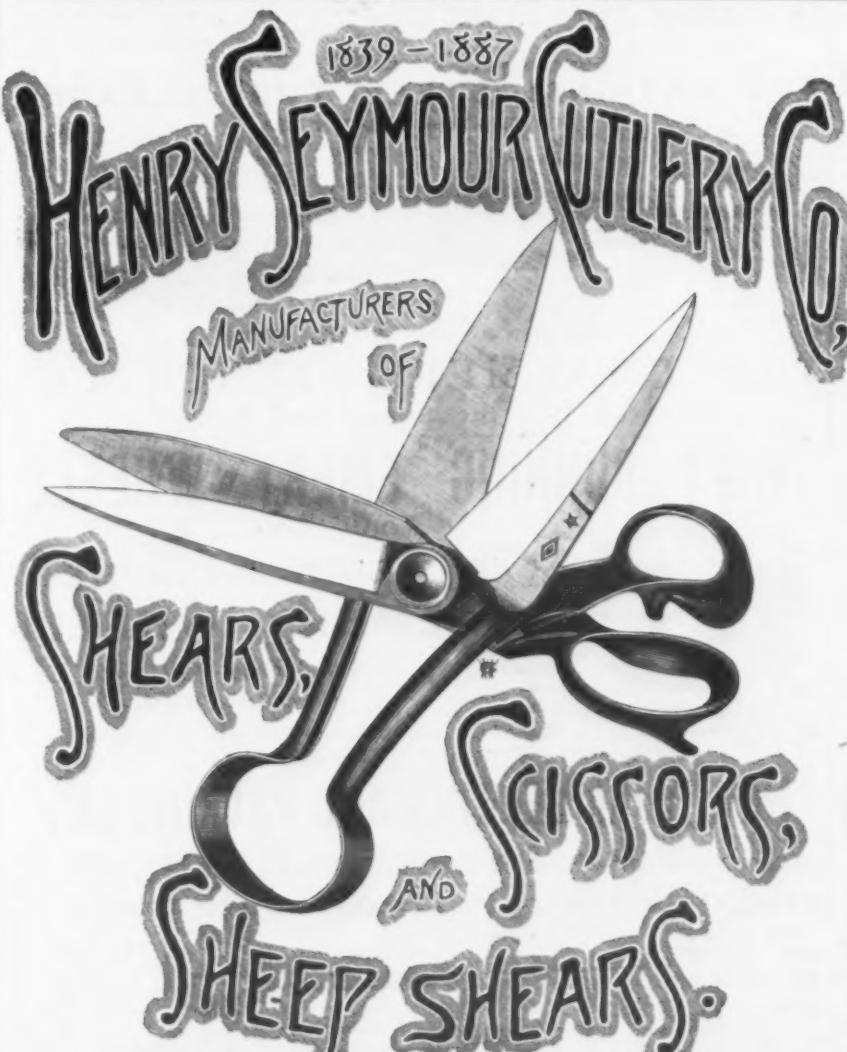
250 KINDS AND SIZES.

All Goods, both Nickel and Maroon Japanned Handles, are now made with Nickel-Plated Blades, giving them an unequalled finish, for which there is no extra charge.

Every Pair Warranted. Money Refunded If Imperfect.

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1837

## A Different Gauge for Blast Furnaces.

At a meeting of the Engineers' Club of Philadelphia, Minis P. Janney describes an appliance devised by Messrs. Taws & Hartman, Engineers, Philadelphia, for the detection of irregularities in the working of blast furnaces in the neighborhood of the tuyeres. Although the blast is supplied to the tuyeres from one main, the air does not enter all of them at equal velocity at all times, and sometimes stops altogether at one or more of them without the furnace keeper being able to tell by observation whether there is anything wrong or not. When the blast ceases to enter a tuyere through an obstruction coming in front of it, or the nozzle becomes clogged, it should be immediately opened by mechanical means until the blast enters again at the maximum velocity. Until the introduction of the little instrument, the trouble was to tell when the obstruction was removed, or even existed; as a tuyere in this condition will frequently, for hours, appear about the same to the eye as a good clear one. Also, if the blast be checked for any considerable time at one or more points, the rate of coal consumption diminishes as the volume of air lessens, causing slower descent of the charge at this point, and either forming a scaffold or giving a very good opportunity for one to form, above the obstructed tuyeres, which, in the large majority of cases, will result in irregular and reduced yield of iron, and possibly in the end permanent obstruction of the whole furnace.

The instrument consists simply of a small glass U tube, or its equivalent, filled to proper point with mercury. This gauge differs from the ordinary blast-gauge in having both ends connected to the blast-pipe at different points, instead of having one end only attached. Between the two points of connection there is a slight obstruction placed in the blast-pipe leading to each tuyere, so as to make a difference in the pressure at the two points of connection. When the tuyere is clear, the difference of pressure is greatest and the mercury in gauge stands at different levels in the two legs. If a tuyere becomes obstructed in any way there is less and less difference in the mercury level, until, if the obstruction is considerable, it becomes level, thus indicating a very much reduced flow of air through the tuyere. Pipes are connected with each tuyere, and all conveyed to same location, where they are attached to separate gauges and all the keeper has to do is to glance at the gauges, when they at once show the condition of the nozzles, beyond question. It has been introduced at a number of places.

first week in February. The lull is due to political disquietude and less favorable advices from England. Still prices have been tolerably well sustained, Forge Pig at 4 francs @ 4.60, and Foundry frances, all per ton, kind. The least change for the better will, it is confidently expected, bring about a sound and lasting revival together with a further improvement. Following has been the foreign iron and steel movement in Belgium during the past four years:

	1886.	1885.	1884.
	Tons.	Tons.	Tons.
Iron Ore	1,363,593	1,353,591	1,488,710
Steel Ingots	276	12	97
Steel Rails	317	422	190
Other Rolled Steel	1,800	2,932	3,763
Wrought Steel	271	458	557
Pig Iron	85,706	99,726	125,619
Iron Wire	14,667	17,899	13,898
Iron Nails	3,219	2,781	4,042
Iron Hails	158	135	763
Sheet Iron	729	834	890
Other Rolled Iron	5,118	5,362	6,561
Nails	493	421	720
Wrought Iron	2,767	2,753	2,705
Castings	860	583	912
Total	1,482,366	1,527,940	1,649,010

### Exports.

	1886.	1885.	1884.
	Tons.	Tons.	Tons.
Iron Ore	10,928	15,598	19,088
Steel Ingots	4,058	4	1
Steel Rails	34,863	56,822	61,620
Other Rolled Steel	21,753	2,058	2,427
Wrought Steel	21,797	10,718	10,065
Pig Iron	31,315	7,850	11,117
Iron Wire	2,277	2,098	2,242
Iron Nails	12,161	10,184	19,742
Sheet Iron	42,295	32,061	38,516
Other Rolled Iron	236,248	227,692	222,611
Nails	8,128	7,511	6,936
Wrought Iron	32,423	22,255	21,660
Castings	29,366	17,947	12,354
Total	576,197	566,300	613,668

The production of Pig Iron and raw Steel in 1886 has been 697,110 tons, against 712,400 in 1885. Finished Iron production has been 170,922, against 169,219 tons of Ingots Steel, 129,215 tons, against 153,012, and Wrought Steel, 129,418, against 125,461.—*Monteur Industriel*.

### GERMANY.

HAMBURG, February 18, 1887.—*Iron.*—The uneasiness about the political outlook has affected the Rhenish-Westphalian Iron market a great deal less than might have been expected, the domestic demand having abated but very little. Spiegel has been less wanted, but Thomas all the more, so that the latter has been ordered even from England. Pig Iron generally remains steady. There is about as much activity and even greater firmness in the market for iron at any time during the winter, stocks decreasing. Few large orders have been received for Wire Rods. Frederick Krupp received the Steel Rail contract in Holland by understanding all other makers. Belgium included, England not bidding. Wire Billes have ranged all the way up to 125 marks, and Wire Rods up to 115. Merchant Iron is sold as high as 110. It is believed that there will be a general rise in Iron and Steel should the general elections in Germany give the Government a working majority. Meanwhile machine shops are not doing as well as they have been before, but not yet to the full extent of their capacity. Car-work are moderately active. We may still quote 10 @ 12 \$ Spiegel, 21 to 52 marks \$ ton, and a higher percentage of Manganese from 3 to 2½ marks more. Advices from Upper Silesia continue quite favorable, the decline that took place in the shares of Iron and Steel works not having affected the price of either Iron or Steel. Merchant Iron being firm at 106, and Wire Rods having risen 2 marks \$ 100 kg. *Metals.*—There has been a slight increase in the price of German Lead, 3½ kg. 13.50 @ 14 marks; Lake Copper 50 @ 52; Spelter, 14.20 @ 15.30, and Tin, 104 @ 105. Vieille Montague Sheet Zinc, 30.30 @ 20.70; ditto, Silesian, 17 @ 18, and Zinc White, 21 @ 22.—*Borsenhalde*

### HOLLAND.

ROTTERDAM, February 15, 1887.—*Tin.*—Has continued tolerably active, both on the spot and afloat. The temporary advance in futures having vanished since, the market closes in rather a dull mood at 12.25 guilders for Bances on the spot, and 81 Billiton.—*Koch & Vierboom.*

### SPAIN.

BILBAO, February 5, 1887.—*Iron Ore.*—There has been a gradual decline in value, in sympathy with advices from England, where there is now a good stock of Spanish Ore. It is to be foreseen, however, that with the exhaustion of these supplies abroad the demand here will revive, and what has been lost in price may then be recovered. The bullion market has not yet been taken here at the irregular prices. Campeche selling from 7½ down to 7.3, and Rubio Superi res from 7½ down to 7. There is an enormous accumulation of available tonnage in our port, reaching 155,000 tons. But little Ore has left our port during the week owing to the heavy sea. Total shipments since January 1, 308,590 tons, against 302,033 last year. *Pig Iron.*—Has been moving off steadily, both for export and coastwise.—*Bilbao Marítimo y Comercial.*

### AUSTRIA.

VIENNA, February 13, 1887.—*Iron.*—Merchant Iron has advanced ¼ florin \$ 100 kg. in Moravia, Silesia, Galicia and Hungary, which advance has been readily subscribed to. The spring demand for Iron makes itself felt sooner than had been expected in consequence of the large orders with which the war department has come forward. Pig Iron is weaker in sympathy with less favorable advices from England. Meanwhile there is a good demand for Wire and its manufacturers with quite an advance therin in Bohemia. The general market closes weaker. We quote Pig, 30 @ 46; Merchant Iron, 100 @ 122.50; Sheets, 140 @ 175; and Beams, 105 @ 110. Metals have been steady at the following quotations: Copper, 55 @ 58 florins \$ 100 kg.; Lead, 17.50; Spelter, 14.20; Tin, 135 @ 136; Antimony, 35; Quicksilver, 222, and Nickel, 400 \$ kilo.—*Handels-Journal.*

### WEST INDIES.

PORT-OF-SPAIN, TRINIDAD, January 21, 1887.—*Asphaltum.*—The market has been steady at \$9 \$ ton boiled, and \$3 \$ ton crude. The export since January 1 figures up 975 tons, against 750 in 1886, and 2,940 in 1885. *Exchange.* 90 days' sight, on London, \$1.83.—*E. P. Musson.*

### EAST INDIES.

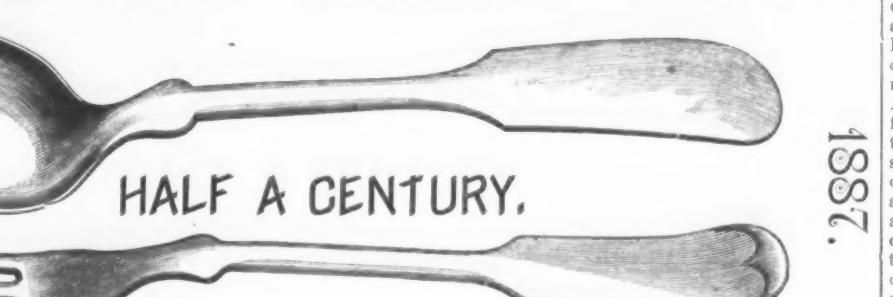
SINGAPORE, January 17, 1887.—*Tin.*—Tin has been abundant and settlements have been large at prices ranging up to \$35.37½ per picul. At the close there are sellers at \$35.25, and buyers at \$35.50 per picul. Shipments this month may be restricted by scarcity of tonnage, and February figures will in consequence be larger than was expected. Tin is sent to London to be sold by steamers or firm. For New York the Cunarder will call shortly and the Mystic Belle is fully engaged. The Triton coming down from Hong Kong has been fixed. For Boston the birth is vacant. *Exchange* has advanced to 3/54d, for six months' sight credits on London. Total shipments of Tin from the Straits Settlements to the United States during 1886 have been 82,015 piculs, against 43,939 in 1885, 59,601 in 1884, 114,284 in 1883, 109,026 in 1882, and 82,824 in 1881.—*Giffillan, Wood & Co.*

### CHINA.

COLOMBO, CEYLON, January 18, 1887.—*Plumbago.*—The market has been steady at the following quotations in rupees \$ ton: Large Lumps, 150 @ 155; Ordinary Lumps, 120 @ 140; Chips, 75 @ 90; Dust, 45 @ 60. Shipments since October 1 have been 31,471 cwt. to England; 795 to Antwerp; 22,633 cwt., against 42,169 last year; 28,556 in 1885, and 71,874 in 1884. *Exchange.* six months' sight on London, 1/6 3/4.—*Volkart Brothers.*

Mr. John E. Fry, formerly manager of the Bessemer Steel Department of the Cambria Iron Company, and afterward superintendent of the St. Louis Ore and Steel Company's works, has been appointed manager of the Wheeling Steel Works, which are located at Benwood, four miles below Wheeling, W. Va. These works were built to make Bessemer steel nail slabs for the Belmont Nail Works, Wheeling Iron and Nail Company, and Benwood Iron Works, joint owners of the plant.

BRUSSELS, February 18, 1887.—*Iron.*—Our market has not displayed quite the animation and buoyancy which characterized January and the



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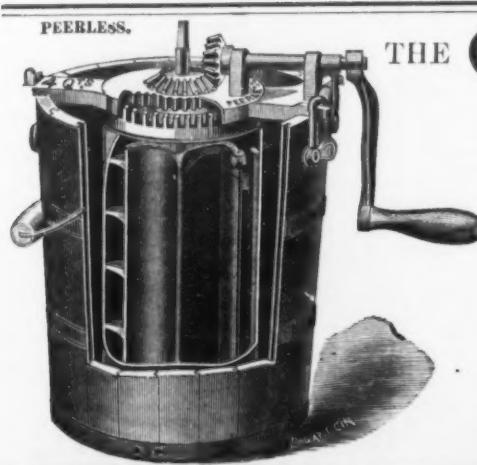
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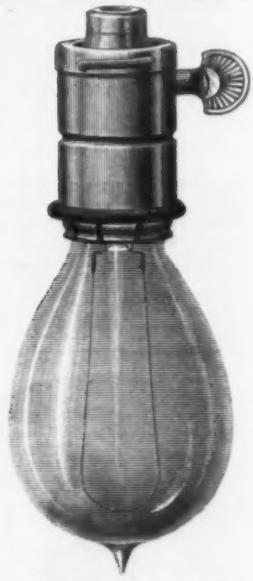


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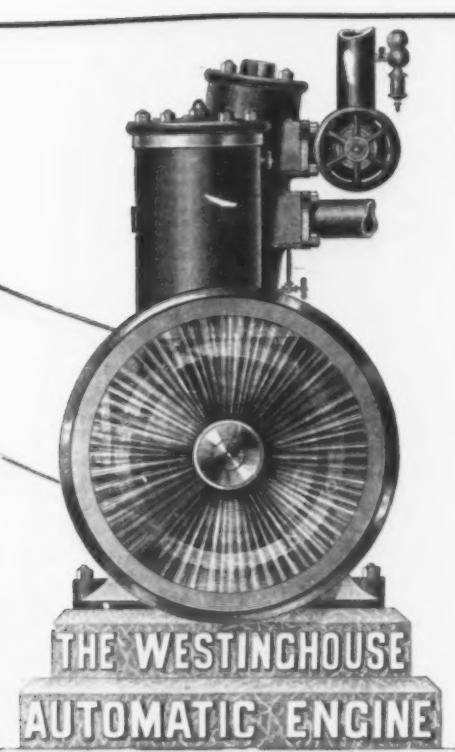
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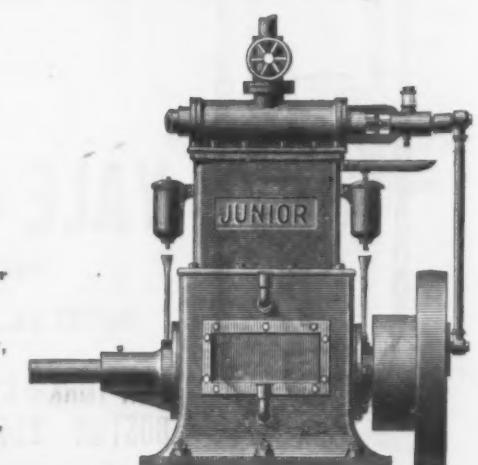
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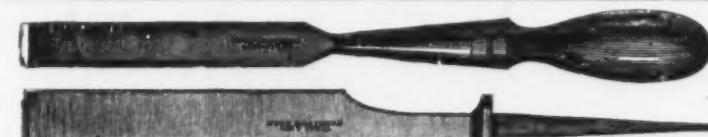
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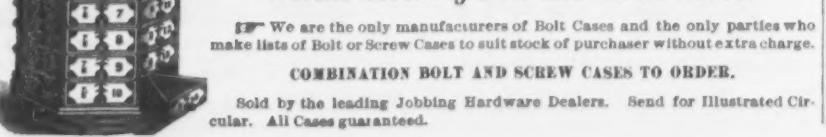
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## THE WEEK.

A railroad in Africa, to extend from St. Paul de Loando to Ambau, 250 miles in the interior, has been commenced under Portuguese auspices, and is something before unhead of in all that vast seaboard. The route recently surveyed is up the Bengo Valley, and promises to become the chief commercial highway in that region. An American named Colonel Davenport is understood to have charge of the work, which, he says, ought to be finished in three years. A distance heretofore traveled in not less than eight days will be reduced to a few hours. There are now on the Upper Congo seven steamers, four of which are owned by the Congo State, and the number will soon be doubled by American, Dutch and French trading companies.

The Board of Trade and Transportation has put together some very telling statistics of the traffic of the New York canals, showing that during the season of navigation the receipts of New York last year were 76,371,237 bushels, against 40,335,390 at the three ports of Philadelphia, Baltimore and Boston. It remains to be seen whether the Interstate Commerce law will not make the canals still more important, relatively and actually, compared with railroad transportation.

The Commissioner of Labor has made his second annual report, which is based almost wholly upon convict labor. There are four systems of employment of convicts in this country—namely, the contract system, the piece system, the public-account system and the lease system. The number of prisoners of all grades employed in the institutions covered by the report is 64,600; the males number 58,714 and the females 5805. Of this total number, 45,277 are engaged in productive labor, 15,360 are engaged in prison duties and 3072 are sick or

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We have the largest and best facilities for furnishing the best quality of work and promptly.

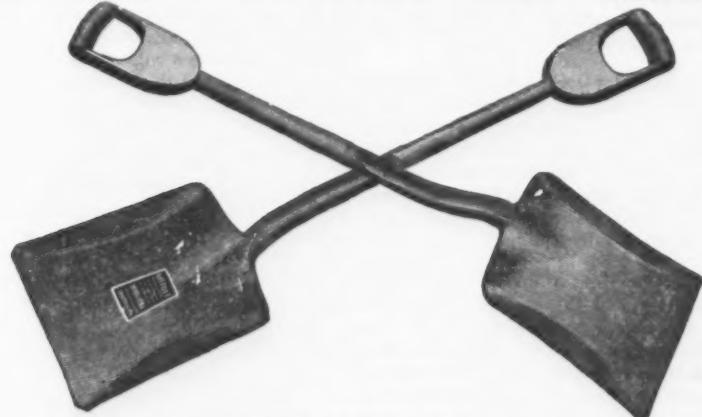
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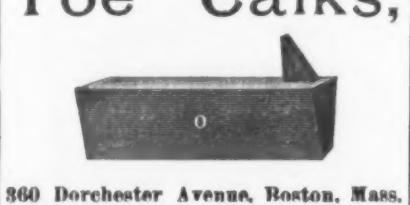
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YOU WILL  
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Malleable Iron and  
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Equal  
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one-tenth the cost. Can be applied with a screw  
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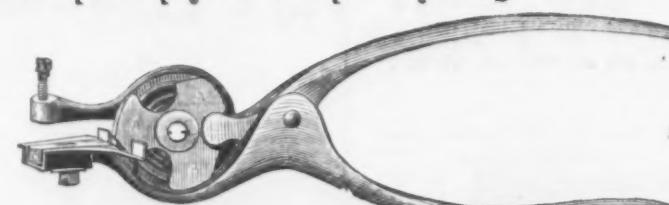
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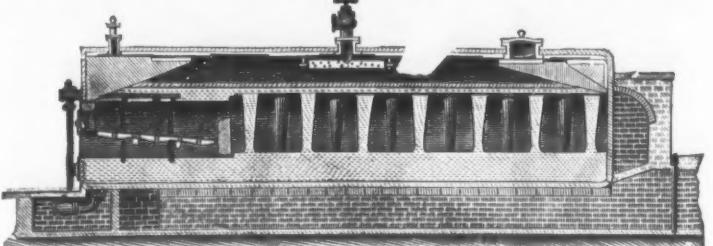
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CHURCH'S PATENT IMPROVED  
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Plumbago or Black Lead.

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Used by all Stove Manufacturers who pride themselves upon the Handsome Castings they make.

Will pit our "NATIONAL" and "EAGLE" RETURN FACING against any similar Facing manufactured.

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Warranted to Outwear Any Other Shoe.

Six Sizes Each. Blunt and Sharp Calk.



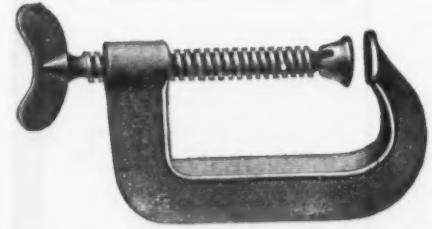
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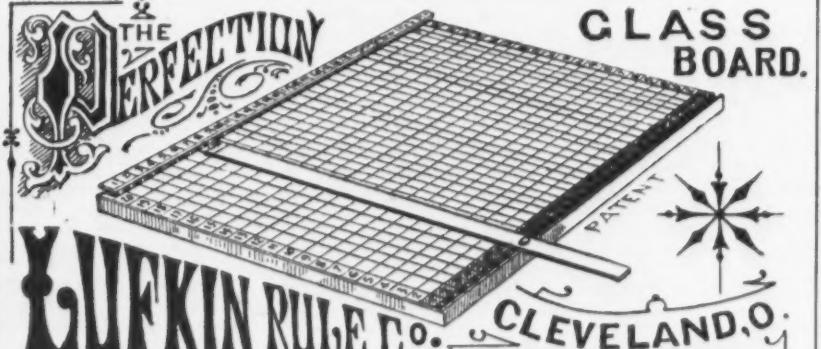
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STEEL  
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Only one style lifter in each size, which is adapted to top, bottom, or center-hung transoms. SEND FOR CATALOGUE & PRICES.  
PAYSON MFG. CO., CHICAGO.

Payson's Sash Locks,  
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**"OSBORN"**

Bright Metal Cages, in Brass, Bronze and Silver Plate.

NEW AND BEAUTIFUL DESIGNS JUST OUT.

We also Manufacture Brass and Bronze Show Stands for Fancy Goods. Catalogues Mailed Free.

ger, principal of the Hebrew Technical Institute, warmly advocated the introduction of technical training and emphasizing the difference between it and industrial or trade instruction.

The grain crop of the Argentine Republic this year will be enormous. The Buenos Ayres Standard, just received, says: "In fact, this new year promises to be the greatest and most profitable season ever enjoyed by the Argentine colonist; the boom began in 1877 on a large scale, but the exports of this year will leave all former export years in the shade."

The total number of immigrants arrived in this country during January from all foreign countries, save Mexico and Dominion of Canada, is 10,302, against 8,749 during the corresponding month last year.

In a hearing before a Legislative committee convened in Boston, Gerard C. Tohey, of Wareham, in behalf of the new Cape Cod Canal Company, stated that their design was to build a canal 1000 feet wide, and that the cost would not exceed \$6,000,000. They asked a charter conditional upon the work being commenced within six months, with a paid-up capital of \$2,000,000.

The steamer Aguan, the first of the new vessels built on the Clyde for the Honduras and Central American Steamship Company, Williams & Rankine, managers, on her trial trip on the Clyde steamed 14½ knots per hour. It is expected that the steamer will do the voyage between New York and Honduras under six days.

Pittsburgh last year erected new buildings to the value of \$2,352,945. The building inspector says that but for the strikes last spring the figures would have reached \$3,000,000 or more.

William Dodds, stove dealer, of this city, found about \$200 in an old stove bought from a neighbor in the same business, since deceased, but a jury in the City Court, before Chief Justice McAdam, directed that the money must be given to the administrators of the estate by whom the stove was sold.

The Poughkeepsie Bridge will be built in accordance with the original plans.

The proposed appropriation of \$500,000 in the nature of a subsidy for the transportation of the South American mails was not sanctioned by Congress.

The amended "immediate transportation" bills which have received the President's signature permit the transportation of pig iron, railroad iron, ore, &c., upon platform or flat cars the same as heretofore, the weight to be ascertained before shipment, and inspectors shall be stationed along the designated route at the expense of the railroad company.

The steel propeller Homer Ramsdell, which is to ply between Newburg and New York, was launched at Newburg last week. The vessel is 214 feet long and 44 feet wide.

A colossal wonder "Tower of Babel," 900 feet in height, and to cost \$400,000, is seriously contemplated in Brussels as an adjunct of the Universal Exhibition to be held next year.

Refining raw sugars in Canada, under the encouragement of recent legislation, has been attended with heavy losses to all concerned. Like the manufacturers of cotton similarly attempted, the finished product was sold in some instances below the cost of the crude material.

An improved dry dock, the largest in this country, has been put under contract with J. E. Simpson & Co., of New York, to be constructed at Newport News Point, near the entrance of Chesapeake Bay. The promoters of the enterprise are the Chesapeake Dry Dock and Construction Company, who have purchased an extensive waterfront on James River, and who are negotiating for the establishment of a shipyard at that point, to be equipped with machinery and plant adequate to construction and repairs on the largest scale. The capital is \$1,000,000.

The annual report of the Lehigh and Wilkesbarre Coal Company states that the production from the mines in 1886 was 2,435,552 tons, an increase over that of 1885 of 223,529 tons, being the largest output by the company in any one year since its organization. On the other hand prices obtained were lower than for any year since 1879.

Pumping engines equal to 5,000,000 gallons daily, from the Holly Engine Works, of Lockport, N. Y., will be in operation in a few days at the waterworks in Erie, Pa.

A correspondent at Lakeland, South Florida, says the recently brilliant prospects of that part of the State are blasted by exorbitant railroad charges. Nor are the agricultural prospects up to expectations. The writer says: "Not one in three of the newly planted orange groves of Florida will ever amount to anything. The observant eye sees in all directions plantations of oranges that have been struggling for three or four or more years to their present state of worthlessness and hopelessness. If half the groves that have been planted should come to paying perfection, which cannot be for 15 or 20 years, oranges will not bring 20 cents a hundred. Probably the great

future of the State is in vegetable production. Florida should become the kitchen garden of the Northern States in the winter months.

Louis Hulter & Co., of Hartford, Conn., have contracted with the Mexican Government for the establishment of an international steamship line between San Diego, Cal., and Mexican and Central American ports, with its southern terminus at San Jose de Guatemala. The vessels are to sail under the Mexican flag, and are to receive a subsidy from the Mexican Government. The first steamer will leave San Diego August 1.

The American District Steam Heating Company, of this city, in consequence of increased business, have decided to enlarge by nearly doubling the capacity of the local plant. The company now have six boilers in operation; to this number two more, capable of generating almost as much steam as the six, will be added.

The railroad disaster at White River Junction, Vt., by which many lives were lost, is attributed by the State Commissioners to a broken rail. The board condemns the use of stoves and lamps in cars.

A case has recently been decided by the Railroad Commissioners of Iowa that serves to explain the practical operation of that section of the Interstate Commerce law relating to long and short hauls. The Chicago, Burlington and Quincy Railroad Company charged \$1.25 per ton for hauling coal from Cleveland to Council Bluffs. At the same time the company charged \$1.80 a ton for carrying coal from Cleveland to Glenwood, a way station at which the railroad is not subject to competition with other lines, but which is 20 miles nearer than Council Bluffs to Cleveland. The railroad company pleaded in defense of this discrimination that the freight rates for coal from Cleveland to Glenwood were as cheap as they could be made, and that the lower rate to Council Bluffs was necessary in order to compete at that point with coal from Missouri, Kansas and elsewhere. If higher rates for coal should be charged to Council Bluffs the company would be driven out of that market. But the Iowa Commissioners, taking their stand on the short-haul section of the Interstate Commerce law of Congress, have decided that the act hereinbefore set forth was unjust discrimination in freight charges. This is the first official interpretation that has been given to the short-haul provision of the act of Congress.

The cotton manufacturing industry at Fall River, Mass., has not been so prosperous as now for six years. Standard goods are worth more than at any time since October, 1883, with the exception of six weeks last autumn, when values were the same as at present.

A Pacific line of steamers to Japan and China, running in connection with the Canadian Pacific Railway, will soon be in operation. The manager of the line, Everitt Frazer, the late Korean consul-general, tested the route by making actual shipments of tea in large quantities, and three Cunard steamers have been obtained and fitted with triple compound engines, guaranteed to give a speed of 14 knots an hour. It is intended that the steamers shall make regular trips on a three or four week schedule, the Parthia leaving Hong Kong early in May as the first of the line. Stops will be made at Hiogo and Yokohama, Japan. The running time from Hong Kong to Yokohama will be seven days, and thence to Vancouver 16 days. As five or six days will be consumed in the two Japanese ports, the whole trip will take 28 or 29 days.

The case of the "Ocean Association" strikers against the Old Dominion Steamship Company was decided by Judge Brown in the United States Circuit Court in this city on Friday. The defendants are John J. McKenna, James E. Quinn and others, against whom orders of arrest were granted several days ago, and this action was brought to secure \$26,000 damages sustained in the longshoremen's boycott. The acts of intimidation complained of, such as sending threatening letters to customers, &c., were not only illegal, rendering the defendants liable for damages, but misdemeanors. Associations have no more right to inflict injury upon others than individuals have; all combinations and associations designed to coerce workmen to become members or to interfere with, obstruct, vex or annoy them in working or in obtaining work because they are not members; or in order to induce them to become members, or designed to prevent employers from making a just discrimination, paid to the skillful and the unskillful, to the diligent and the lazy, to the efficient and the inefficient; and all associations designed to interfere with the perfect freedom of employers in the proper management and control of their lawful business, or to dictate in any particular the terms upon which their business shall be conducted, by means of threats of injury or loss, by interference with their property or traffic, or with their lawful employment of other persons, or designed to abridge any of those rights, are illegal combinations or associations, and all acts done in furtherance of such intentions by such means and accompanied by damage are actionable. The plaintiffs are not debarred from the usual remedy, and the motion to discharge from arrest is denied.

# A NEW DEPARTURE! THE SMITH & WESSON HAMMERLESS, SAFETY REVOLVER

Provided with Automatic Shell Extractor, Rebounding Lock.

Calibres 32 and 44

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PREPARATION.

Calibre 38,

Weight 18½ oz.

NOW READY.



## ABSOLUTE PROTECTION FROM ACCIDENTAL DISCHARGE INSURED.

The Latest Production from the Works of SMITH & WESSON, Springfield, Mass., Manufacturers of Superior Revolvers, both Double and Single Action.

**Superiority in Every Point Universally Conceded.**  
SEND FOR DESCRIPTIVE CIRCULAR.

HEAVY STEEL

— AND —

Iron Plates,  
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CYLINDERS

For Screening Ore,  
Coal, Stone, Phos-  
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REVOLVING  
SCREENS

ROUND  
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HEXAGON.

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FOR

Placer  
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Battery Screens

Of all kinds and sizes.

Mining Screens

For all kinds of Ores



Elevators, Malt Kiln Floors, Grain Dryers, Threshers,

Separators, Corn Shellers and all kinds of Grain Cleaning Machinery; also for Mining and Concentrating Works; Coal, Coke and Ore Screens; Gas and Water Works; Paper, Woolen, Flour and Oil Mills; Filters, Strainers, Ventilators, &c. Special attention given to work for Railroads and Car Builders. Perforated Tin and Brass of all sizes. Iron, Steel, Copper, Brass and Zinc punched to any size and thickness required.

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SATISFACTION GUARANTEED.

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100 BEEKMAN STREET, NEW YORK.

(Concluded from page 1.)

wheels are; whether one wheel is 20 inches higher or lower than the other or the axle is turned in any angle, the weight which rests on the spring A produces always a central compression on this spring.

The counter-shaft is a strong steel shaft, heavy enough so that the stress which is produced by the pinion L (the stress is not only due to a twisting, but is due to a twisting and bending moment combined) will not bend or even spring it, which would wear the journal boxes rapidly and sometimes break the journal stands and put unnecessary friction on them. The journal boxes are parted in such a way that the wear can easily be taken up and at the same time keep the counter-shaft in its former position.

The bedplate and heater is a very strong casting for the size of the engine, and is bolted to the boiler in such a manner that the expansion and contraction of the boiler will not have any influence on it. The exhaust steam which is used to heat the feed-water goes in at one end, right below the steam chest of the cylinder, and passes through between the feed-water pipes to the other end of the heater, whence it is led through a second partition out through the exhaust pipe and into the smoke box below the smoke stack and low enough to give a good blast. The feed-pipe goes in at the end of the heater next to the cylinder, and returns twice inside of the heater before it is led out again from the same end, whence it is then led into the side of the boiler. The feed water is heated to a very high temperature, about 200°, before it enters the boiler. By disconnecting the pipes outside, and by removing one plate, the whole piping inside the heater may be taken out.

There are two water tanks, one on each side of the boiler near its center. These

post on the platform he has everything which is to be handled in his reach without turning.

## English Letter.

(From Our Regular Correspondent.)  
LONDON, February 14, 1887.

### THE SITUATION

is very much the same as it was a week ago, with the sole exception that there appears to be now more confidence in the preservation of peace than there was then. It is believed that there will be no war between France and Germany—at all events for some time to come—the German Emperor being said to be adverse to entering upon another severe struggle during the now short remainder of his life. I have to-day had some conversation with a well-informed German who holds a responsible official position at Berlin, and who only left that city two days ago. He is astonished to find so much talk and flurry here on the subject of the alleged danger of war. At Berlin, he states, there is no real apprehension on the subject, it being very well understood that Prince Bismarck's utterances are merely electioneering squibs fired off in order to frighten the rural electors into voting for candidates who will enable the Septemate bill to be carried through the Reichstag by a crushing majority. My informant deems the whole agitation a mere product of the financiers and newspapers. He very properly ridicules the importance attached by respectable English papers to the opinions of the Continental newspapers, seeing that it is well known that in Paris, as well as at Berlin, Vienna and other centers, it is a common thing for Bourse operators to run a newspaper solely to further the schemes in

the reorganized "ring." The German works have felt very keenly the low prices quoted on recent occasions by British concerns to the German Government railways, and are willing, it is stated, to suffer losses in the outer world provided they can keep their own preserve well guarded and safe from outsiders. In the course of a week or two I may be able to write more definitely, and perhaps more fully, on this subject.

SCOTCH PIG IRON has been irregular and rather weak, both in respect of warrants and makers' special brands, despite the relatively scarcity of fuel caused by the miners' strike and the favorable shipping returns. There are now 74 furnaces (of which 49 only are on Scotch pig) at work in Scotland, against 94 a year ago. In Connal's stores there are 82,803 tons (an addition of 600 tons last week), compared with 687,456 tons this date 1885. Shipments to date this year have increased by 8160 tons, while the importations of Middlesbrough pig into Scotland have increased by 10,584 tons.

MIDDLESBROUGH PIG IRON is fairly steady, but not quite so uniform as it was a few weeks ago, buyers being under the impression that certain weak holders will shortly have to get rid of the iron they hold at the best prices they can get.

HEMATITE PIG IRON is steady, but there is not much new export business stirring. There are 50 furnaces at work on the West Coast, against 44 a year ago. Stocks in stores only are 150,902 tons, or 18,809 tons increase this year. The shipments of pig iron are 17,850 tons less, and of rails 18,568 tons more to date this year.

THE IRON MARKET has undergone no special change during the week. Considerable effort has been made to maintain values, but it has not

The 9000 tons asked for by the London and South-western Railway Company have been divided between the Dowlais and the Ebbw Vale companies, at a price which is about £4. 7/6, but whether this is delivered on the Devonshire or Somersetshire coast, or is simply f.o.b., has not transpired. Inquiries for the United States are still being made, and special mention may be made of an order for 10,700 tons—assumed to be for Transatlantic shipment—which buyers are desirous of placing.

### HARDWARE TRADES.

In London the severe weather has put a check upon the demand for spring goods, the anticipations created by the genial days at the end of January and the beginning of the month being for the moment completely dissipated. London agents of provincial houses speak in high terms of plenty of orders at the works; but as regards business on metropolitan ground, it is pronounced decidedly slow. Shipping orders appear to be fairly good, although in this direction there is not quite so much life in things as was shown a fortnight ago. At Birmingham, as the apprehensions of war subside, more animation is apparent in the demand from most of the Continental centers, and especially Russia and Germany. With the United States our trade is rapidly growing, and even in hardware it nearly equals now what we send to Australia. Brazilian orders have been on a very large scale, and the Argentine Republic is an improving customer for bedsteads, edge-tools, cutlery, tinware, axles, and other products of this district. The Russian demand for engines and machinery, both for dockyard use and mining purposes continues to grow, and Spain is an improving customer for various kinds of tools, machinery, gas fittings, bedsteads, &c. Merchants do not report very favorably yet of the Australian

the same month of last year. The aggregate quantity of iron and steel exported was 275,222 tons, valued at £1,710,463, as compared with 217,988 tons, and £1,606,448 in January, 1886. Curiously enough less pig iron went to the United States than in the same month last year, although in other lines we sent you much larger quantities, as will be seen by the appended details:

Articles.	Month of Jan., 1887.	Month of Jan., 1886.	Month of Dec., 1886.
Hardware and cutlery, &c.	32,517	24,618	27,408
Iron-Pig, tons	23,750	24,829	12,306
Bar, angle, rod, &c., tons	398	255	108
Railroad, all, tons	15,463	—	5,854
Hoops, sheets, plates, &c., tons	—	1,745	611
Tin plates, tons	14,455	17,631	21,455
Old wrought, tons	550	96	347
Old, tons	21,667	3,271	11,932
Steel, un wrought, tons	16,353	1,795	22,782
Lead, all sorts, tons	16	228	90
Special return	—	—	—
Iron rails, tons	10	—	—
Steel rails, tons	15,213	—	8,584

The bulk of the steel shipped to you evidently consisted of Bessemer blooms, as the average price per ton was less than £5.

### Domestic Clothes Tongs.

A new article for household use, more particularly for use in the laundry, is being put upon the market by the Domestic Novelty Company, Cincinnati, Ohio, and is illustrated in the accompanying engravings. The first of these shows the parts of which the article, which is known as the Domestic Clothes Tongs, is composed, and the second



Fig. 1.—Domestic Clothes Tongs, Open.

indicates the manner of use. The article consists of two pieces of wood, connected together by links near one end, and by a peculiar form of handle which acts as a lever at the other end. A wire spring placed inside of the handle serves to keep the tongs open when not compressed for grasping some article. The front end is held in position by a loop of metal fastened to one of the rods and extending around the other.

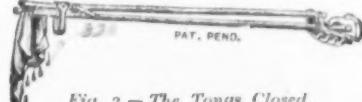


Fig. 2.—The Tongs Closed.

This prevents the tongs from opening too wide or exceeding the capacity of the hand to manage at the opposite end. Our second engraving shows the tongs compressed in such a way as to lift a wet article from a wash boiler or similar receptacle. The advantage of this article over the piece of broom-stick handle, which is usually employed, will be manifest upon inspection. The article is very cheap, sells readily, and accordingly is of interest to our readers in general. In addition to its usefulness in laundry-work, this article serves a satisfactory purpose in washing windows, for which purpose it holds a cloth or sponge securely. It may also be used in dusting walls and ceilings, lifting picture cords and window curtains.

### The Simonds Saw—Inserted Point.

The illustration herewith given represents this saw, which is made by the Simonds Mfg. Company, Fitchburg, Mass. One of the special features to which particular attention is directed by the company is the fact that the ring and the point are on two different circles, which enables the saw to stand up to a very heavy feed, as it is practically a solid-tooth saw as far as the bearing for the point is concerned. The fact that the nubs, depressions, &c., of the point are so made



The Simonds Saw.

with regard to each other that no part is in any way weak is also alluded to, as well as the fact that the point is so locked into the plate by the ring that no part of the point is subject to any undue strain. The points, instead of being drop forged, are milled, and are described as made absolutely accurate, so that they can be duplicated without the slightest variation. Among other advantages alluded to as possessed by these saws are the good clearance for sawdust, the facility with which the points can be inserted or removed, that the points can be with reasonable care be swaged in the plate, and the strength, durability, &c., of the saws.

The biggest bronze casting ever undertaken in America was accomplished successfully last week by the Henry Bunnard Bronze Company, of this city, who are engaged upon the equestrian statue of General Meade, for Philadelphia. The metal was 90 parts copper and 10 parts tin, weighing altogether 7500 pounds. The statue, when finished, will be 16 feet high and weigh about 10,000 pounds.

The city of Indianola, formerly the principal maritime port west of Galveston, will be abandoned on account of exposure to floods and cyclones, the railway connections being transferred to Lavaca, 10 miles north.

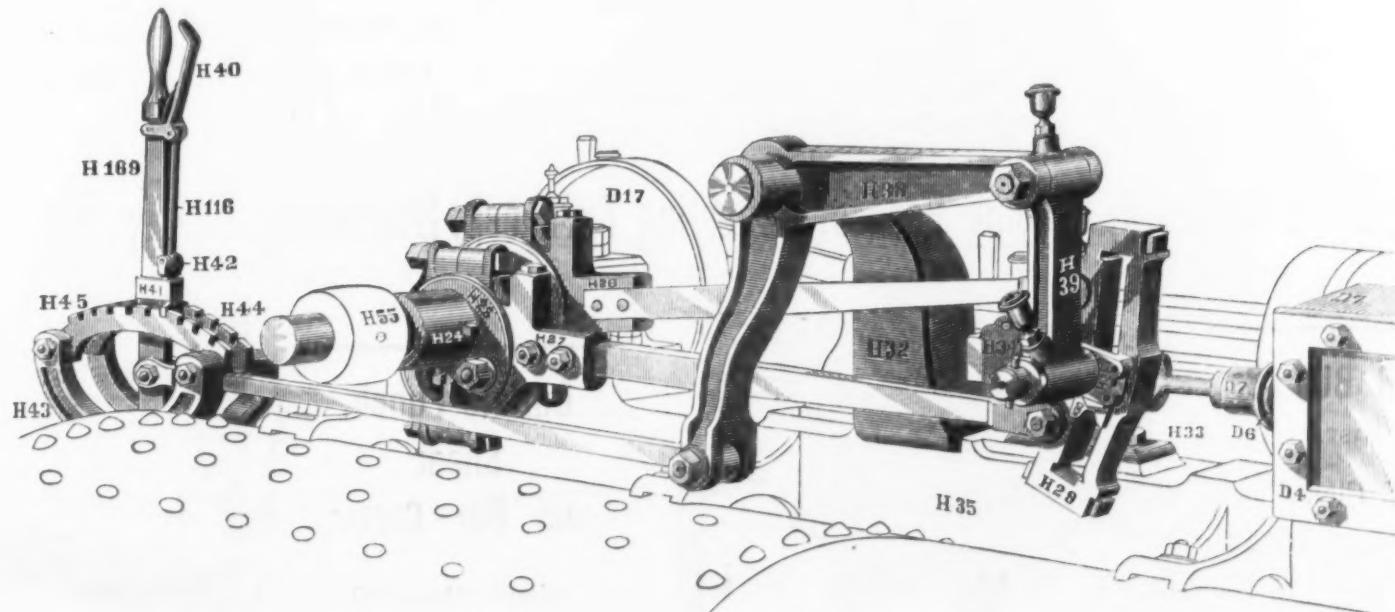


Fig. 4.—Details of Valve Motion.

### THE SPRINGFIELD TRACTION ENGINE.

tanks rest on and are bolted to the main frames, as shown in Fig. 1. They will hold about 75 gallons or 2½ barrels of water, and are made very substantial. A cross-head pump is used to feed the boiler when the engine is running, and an injector is used when the engine is standing still, but both can be used at the same time. When on the road both can be operated by the engineer, who need not get off the platform or stop the engine.

Fig. 4 represents the valve motion. The eccentric next to the journal is cast with a long hub, and on this hub rests the other eccentric H 25. This eccentric has a slot, through which goes a stud screwed with one end to the eccentric next to the journal. The other end has a washer and nut by which the eccentric H 25, with its turned and faced sides, is bolted against the turned and faced sides of the eccentric next to the journal. The long hub H 24 of the eccentric next to the journal has two strong steel set screws by which both of the eccentrics are held firmly to the crank-shaft (the set screws fit in recesses on the crank-shaft). The link H 29 consists of two castings, which can be adjusted and the wear taken up by the bolts as shown in cut. The link block H 30 is a solid casting made from phosphor-bronze. This block has an unusually long journal for the hanger H 39, which allows the link to be lifted with ease. The lever crank H 38 is one very strong casting which cannot spring, and thus assures the motion of the link to the valve rod to be perfect. The reversing and changing the cut off of the engine is done with the lever H 169. The lever crank H 38 is as seen in the cut, put on the inside of the link circle, which permits the link to be lifted with ease, and the steam chest cover D 4 to be taken off readily when the valve is to be inspected. When the engine is running on the road without the use of the governor, the flow of steam to the cylinder should be regulated by the cut off.

The brake is powerful and well designed. The throttle valve is handled with a lever (the same as our reverse lever), and is next the reverse lever, as shown in Fig. 1. When set to furnish power to run a separator or other machinery, there is a pin in the hub of the fly-wheel. The sliding in and out of this pin is prevented by a set-screw. This set-screw is turned loose and the pin slid back about two inches, and the set-screw is then screwed up again, which will disconnect the entire gearing of the engine. The platform can also be removed to enable the engineer to get closer to the boiler. The engine is so constructed that when the engineer is at his

which they and their cliques are interested. With this opinion I am in entire agreement, and think it little less than disgraceful that most of our newspapers daily devote column after column to telegraphic reports of the twaddle and gossip of the Continent of Europe, while telegrams from the United States and British North America, Australia, India or South America, are either non-existent or crammed into paragraphs which are stuck in odd corners as mere typographical make-weights, or, as the printers call them, "filips."

Meantime our iron markets are quiet, and there is only a relatively limited amount of new business on offer. This may be caused by the very free buying forward which took place at the end of 1886 and the beginning of this year, or it may be the outcome of an impression that the rise is giving way, with the probability of lower quotations shortly. Possibly both causes are producing the effect witnessed. At Bolckow, Vaughan & Co.'s steel works the dispute with the men has been arranged on the basis of an immediate rise of 2½ per cent., and the coming into operation of a sliding scale to be mutually agreed upon at the end of March. The link block H 30 is a solid casting made from phosphor-bronze. This block has an unusually long journal for the hanger H 39, which allows the link to be lifted with ease. The lever crank H 38 is one very strong casting which cannot spring, and thus assures the motion of the link to the valve rod to be perfect. The reversing and changing the cut off of the engine is done with the lever H 169. The lever crank H 38 is as seen in the cut, put on the inside of the link circle, which permits the link to be lifted with ease, and the steam chest cover D 4 to be taken off readily when the valve is to be inspected. When the engine is running on the road without the use of the governor, the flow of steam to the cylinder should be regulated by the cut off.

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been wholly successful, and many fluctuations have ruled. The net result of the changes has been something akin to stagnation. Makers, in the belief that a better consumption demand is being developed, are inclined to withhold quotations until the speculative operations have been reduced, while buyers, knowing that a fair amount of iron is held by those who cannot keep it indefinitely, naturally hang back in the hope of being able to do business on better terms than can be secured just now. At Glasgow the closing price for Scotch warrants was 43/11 ½. Makers' brands have been irregular, despite the reports that supplies in the United States are running low.

A fair business has been done in hemispheres. Cleveland, depending so much upon Scotland, has also been irregular, but the irregularity has been less marked, about 13/3 @ 13/6 having ruled. In Staffordshire business of a from hand-to-mouth character has chiefly occupied the market. Producers, however, are well sold forward, and so far show no disposition to yield. In the Swedish market there is for the moment little less activity, but the development of the season is expected to bring with it greater vigor. For ordinary sorts, suitable for the Indian and Levant markets, the following rates are now quoted: Hammered assorted bars, £5. 15/ @ £9; rolled assorted bars, £8 @ £8. 2/6; 3 x 3/4 short bars, hammered, £8. 2/6 @ £8. 5/; rods, £8. 10/ @ £8. 15/; at steamer London, less 2½ %. The finished iron departments show better condition. Some makers are full up with orders, but others are complaining of the lack of specifications. Sheets, both black and galvanized, are in the greatest demand, and prices are well sustained at the recent advances, while bars, hoops, rods, &c., of the more ordinary grades are in good request at better rates. Plates and angles are without feature except that they are in rather better request. For old rails, wrought scrap, and cast iron there is now quoted 70/; double heads, 65/6 @ 67/6; flanges, 52/6 @ 55/; No. 1 wrought scrap, 40/; old boiler tubes and cast iron, 37. 6 @ 40/; f.o.b. usual ports. Freights for pig iron by ordinary steamer from Glasgow to New York are now quoted at 7/ @ 8/ ½ ton. Steel occupies a comparatively strong position, and is well maintained at quoted rates. The improved condition of all the shipbuilding trade has exerted a favorable influence, and in the plate department more or less activity prevails. The strike at Middlesbrough has been concluded by a compromise. The demand for sleepers is exceedingly small just now, but for blooms the requirements are numerous, and orders cannot be placed under £4. Steel rails are required by the Indian Midland and the Bombay and Baroda Railway Companies.

# BUFFALO FORGE COMPANY,

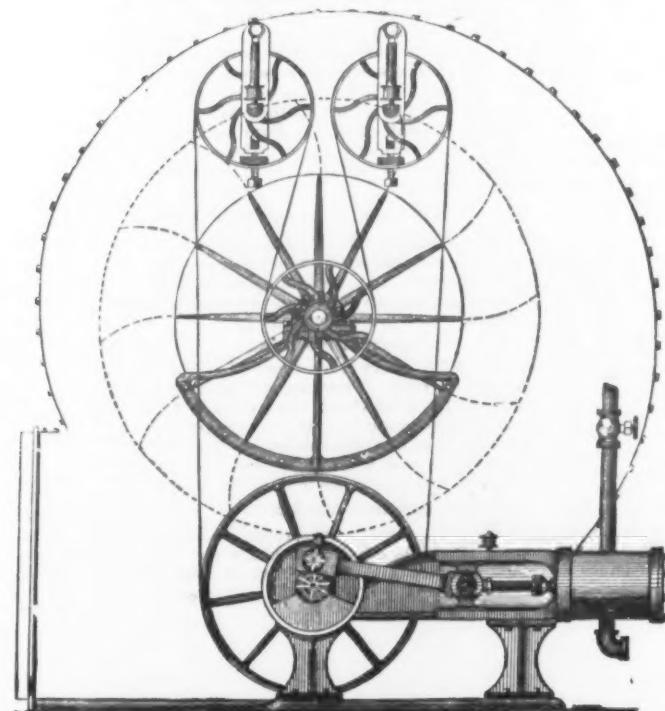
MANUFACTURERS OF

## BLOWERS,



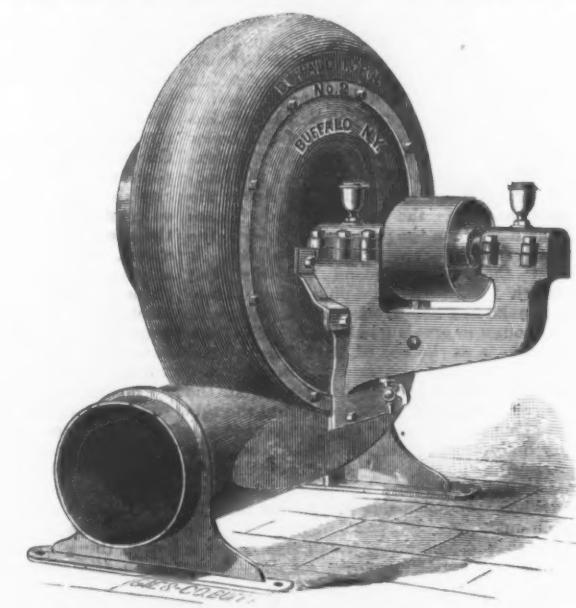
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### LOOSE PIN, LOOSE JOINT.

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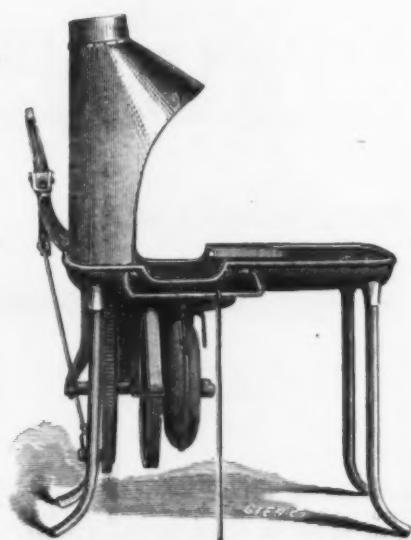
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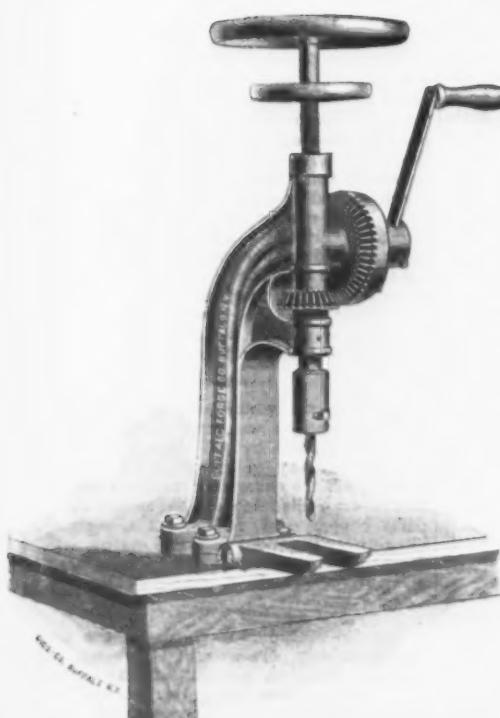
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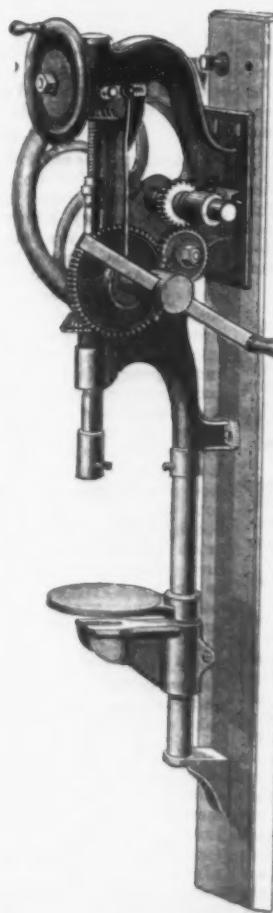


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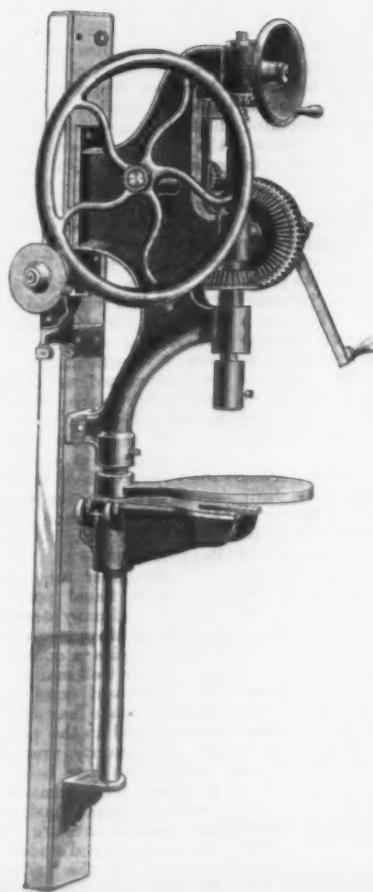
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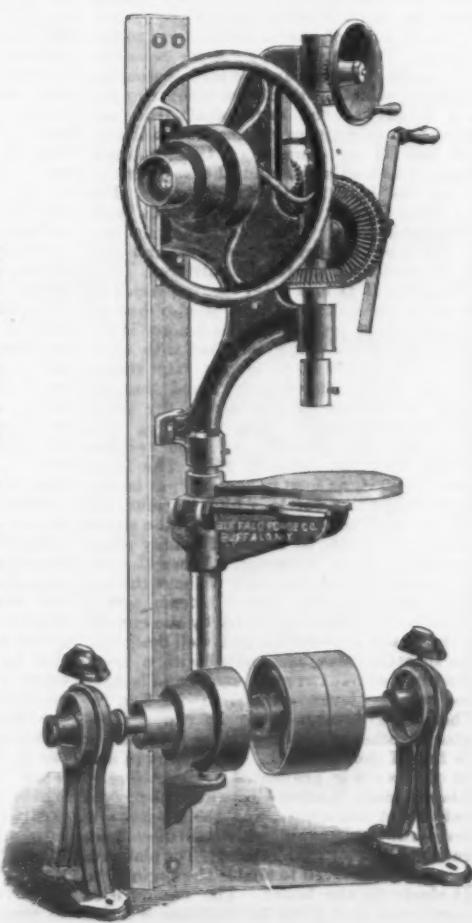


Best Selling Tools in the Market.



BUFFALO FORGE COMPANY,

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## THE IRON AGE.

## MECHANICAL.

## Machines for Raising Water.

In an interesting article on "The Drainage of Fens and Low Lands by Steam Power," published in the *London Engineer*, Mr. W. H. Wheeler says, among other things:

The machine required for efficiently draining low lands is one that will readily adapt itself to the varying amount of work to be done, owing to increase or decrease of lift from the rise and fall of the tide, or of floods in the outfall into which it discharges, and from the lowering of the water in the feeding drain as pumping proceeds. The parts should be as simple as possible, and the machine should be so constructed as not to get out of order from lying by, owing to the intermittent character of the work, most pumps being idle for the greater part of the year. Setting aside special contrivances which have occasionally been used, and, owing to their unsuitability, the use of which has not been repeated, the machines used for raising water for the drainage of land are scoop wheels, scoop pumps, bucket pumps, and centrifugal pumps. Of these the scoop wheels are the oldest type of machine, and still most generally in use, both in this country, in Holland and in Italy. They are, however, gradually being superseded by centrifugal pumps. The scoop or float wheel, a full description of which will be hereafter given, resembles a breast water-wheel with reverse action. It meets most of the requirements of a machine for land drainage. It is simple, and easily repaired by such mechanical skill as is generally found in country districts. Owing to the slow velocity at which a scoop-wheel travels, it is well adapted for being driven by wind-power or by the old type of engines running at slow speeds, and using steam of very low pressure. It is not easily damaged by pieces of wood or other hard substances that may escape the gratings and be carried into the raceway, or by ice, and is not affected by weeds to the same extent as pumps. With low lifts, and not much variation in the height of the lift, a properly constructed wheel gives off a very large proportion of the power applied.

It is, however, a ponderous machine—large wheels weighing from 40 to 50 tons—by which a great mass of material is put in motion at a slow speed, its dead weight in proportion to water lifted comparing very unfavorably with the pumps. It requires considerable space, a large amount of masonry, and expensive foundations. The slow speed at which a wheel revolves unfits it for working economically with modern engines, the gearing required to diminish the speed detracting from the useful effect of the power applied. This machine is not well adapted for situations where a high lift is required or where there is much variation in the lift. As the angle at which the float enters and leaves the water affects the efficiency of the wheel, any material alteration of the level of the water, either by the rise and fall of the tide or by sudden floods on the exterior, or by the lowering of the water as pumping proceeds on the interior, seriously affects its discharging capacity. Nearly all land, and especially peat, continues to settle for many years after a pumping station is erected. If a wheel is placed low enough to meet this contingency in the first instance a considerable amount of further capital is required to meet the cost, while the wheel will for many years be doing an unnecessary amount of work. A subsequent lowering necessitates the reconstruction of the masonry of the raceway and of the wheel. Notwithstanding these drawbacks, the scoop wheel is an instrument that has done very excellent work in its day; for the colonies and remote places where wood is more plentiful and available than a trained mechanic's services, it is still worthy of use. Some of the old wheels have been very considerably improved, and made to perform a very efficient duty, and there is, perhaps, little to choose between the work done by a centrifugal pump and some of the best wheels. Most of the wheels, however, which are now in use are so constructed as to be extremely wasteful of power, some not usefully employing more than 30 per cent. of power applied. The defects of some of these can only be remedied by their being replaced with more efficient machines; others, by means of alterations to the wheel and engines which could be effected without incurring great outlay, could be made to run with half the coal now used, and be made to deliver a larger quantity of water.

## The Improved Ballantine Grease Cup.

The Walker Mfg. Company, of Cleveland, Ohio, are bringing out an improved form of their Ballantine automatic grease cup, which we illustrated and described in our issue of June 24, 1886. The cup body is bored accurately, and a piston is fitted to slide in it. The discharge-opening with which it is provided has a reduction at its upper end. The piston is mounted on a stem, the lower end of which is tapered in the neck of the discharge-opening. The taper of the stem is made to agree with the varying amount of pressure of a spring arranged above the piston, so that the amount of grease delivered in the discharge-opening may be uniform. In order to accomplish this the stem and spring are inversely related. Thus, when pressure is put on the grease, the spring is compressed and the stem rising in the discharge-opening closes the opening in proportion as the pressure is increased. Should it be necessary to give an extra amount of grease at any time to a bearing, it is only necessary to press down on a finger-wheel. This does not in the least interfere with the automatic working of the cup. It is obvious when the grease passes out of the cup that the spring under compression begins to elongate and weaken in pressure, at the same time the paper stem passes further into the discharge-opening, thereby increasing the opening at the neck as the pressure is diminished. Crank and cross-head pins, pitman, loose pulleys and other moving parts of machinery can be lubricated by this grease cup without the inconvenience of oil being thrown

around; also, all ordinary bearings, saving considerable in oil and attention. The cup empties itself in one operation.

## Water Raising by Centrifugal Pumps.

In a communication to the *Boston Journal of Commerce*, Mr. Samuel Webber says:

I do not know to what height water has ever been lifted by a centrifugal pump, but Wm. O. Webber has made some experiments with one at the Lawrence machine shop, in which he attained a height of 60 feet, with a coefficient of 40 per cent. of the gross power used for the purpose. At a height of 17 feet he obtained a net result of about 70 per cent., and from this point it gradually diminished, the "power curve" crossing that of the effect of a reciprocating pump at about 32 feet or nearly the height to which water would be raised in a vacuum by atmospheric pressure. Below this height the centrifugal pump seems to be the most economical; probably from the smaller friction of working parts, and above this, the advantage is all with the plunger pump. In the Lawrence tests the pump was about 9 feet above the water level, and the best results were obtained when the water was lifted to about the same height above the pump. I will not indulge in any speculative theories on this point, merely saying that there is need of more experiments on the matter, but return to the original proposition that the water must be forced to all the height that it rises above the level of the pump.

## Improved Variety Saw.

We illustrate on this page a new variety saw with bevel table, built by the Egan Company, 179-199 W. Front street, Cincinnati, Ohio. The machine, being all iron

making the mill very compact and not liable to get out of order. The weight of the mill is 18,000 pounds. This company also build steam-feed engines for saw mills, and Cunningham's new double-cylinder reversing hoisting engine, adapted to use as warehouse hoists, builders' hoists, deck hoists for vessels, &c.

## The Most Economical Elevator.

In an article on "The Most Economical Elevator," published in *The Stevens Indicator*, Mr. E. E. Magovern says:

The elevator systems at present employed in buildings are classified as follows: 1. Steam; 2. Hydraulic; 3. Belt. The first class includes those in which a steam-engine is connected directly, by means of gearing or belting, with the drum upon which the cable operating the car is wound, the engine running, by means of a valve under the control of the operator, only when required to raise the car; and those in which a steam-engine is connected by belting running on fast and loose pulleys with the drum upon which the cable operating the car is wound, the engine running continuously, although the mean effective pressure, controlled by an ordinary governor, is reduced when the elevator is not in operation. Frequently an automatic contrivance for reducing the speed of the engine when the elevator is stopped is employed. The engine is used solely for the purpose indicated. These two classes of steam elevators may be classified as: (a) Intermittent. (b) Continuous.

The second general classification—viz., the hydraulic elevators, are those in which the static pressure or head of water is the source of energy, and is employed in a hydraulic engine. This static pressure may be

3 minimum.....	C.....	50
4 minimum.....	A.....	85
5 minimum.....	D <sub>1</sub> .....	90
6 maximum.....	D <sub>2</sub> .....	100

## Cost of Repairs.—(Value 27 1/2.)

1 minimum.....	C.....	20
2 minimum.....	D <sub>1</sub> .....	40
3 minimum.....	D <sub>2</sub> .....	50
4 minimum.....	A.....	60
5 minimum.....	E.....	90
6 maximum.....	B.....	100

## Cost of Attendance.—(Value 95.)

1 minimum.....	E.....	10
2 minimum.....	C.....	30
3 minimum.....	B.....	50
4 minimum.....	D <sub>1</sub> .....	75
5 minimum.....	A.....	85
6 maximum.....	D <sub>2</sub> .....	100

Taking the cost of material and other items involved as at the present time in the city of New York, the comparative figures for elevators doing the same work (i. e., of same lift, number of trips per day and loads lifted) were obtained. Manifestly the elevator, the sum of whose resultant comparative figures is a minimum, is the most economical. The following table, therefore, gives the most economical elevator when the four facts above are considered:

## The Most Economical Elevator.

Total maximum values, 33 1/2 + 27 1/2 + 95 + 100 = 255 1/2.

## Comparative figure.

1 minimum.....	E.....	23.25
2 minimum.....	C.....	77.6
3 minimum.....	B.....	111.
4 minimum.....	D <sub>1</sub> .....	130.25
5 minimum.....	A.....	191.58
6 maximum.....	D <sub>2</sub> .....	242.08

Other items which frequently affect the decision are: 1. Want of necessary street-water pressure. 2. The requirement of more than one elevator. 3. Smoothness of

manufacturers and merchants, and form the basis of a regular trade in the apparatus for warming by steam. The ruling dimension in wrought-iron tube work is the external diameter of certain nominal sizes which are designated roughly according to their internal diameter. These nominal sizes were mainly established in the English tube trade between 1820 and 1840, and certain pitches of screw thread were then adopted for them, the coarseness of the pitch varying roughly with the diameter, but in an arbitrary way utterly devoid of regularity. The length of the screwed portion on the tube end varies with the external diameter of the tube according to an arbitrary rule of thumb; whence results for each size of tube a certain minimum thickness of metal at the outer extremity of the tapering screwed tube end. It is the determination of this minimum thickness of metal for the tapering screwed end of a wrought-iron tube which constitutes the question of mechanical interest.

For a tapering tube end for a nominal 2 1/2 inch tube—that is, a tube of about 2 1/2 inches internal diameter and 2 7/8 inches actual external diameter, the following particulars are given: The thread employed has an angle of 60°; it is slightly rounded off both at the top and at the bottom so that the height or depth of the thread, instead of being exactly equal to the pitch, is only four-fifths of the pitch or equal to

(0.8) —, if  $n$  be the number of threads per

inch. For the length of tube-end throughout which the screw thread continues perfect, the empirical formula used is

(0.8 D + 4.8 x — where D is the actual external diameter of the tube throughout its parallel length, and is expressed in inches. Further back, beyond the perfect threads, come two having the same taper at the bottom, but imperfect at the top. The remaining imperfect portion of the screw thread furthest back from the extremity of the tube is not essential in any way to this system of joint, and its imperfection is simply incidental to the process of cutting the thread at a single operation. From the foregoing it follows that, at the very extremity of the tube, the diameter of the bottom of the thread is,

$$D = \left[ \frac{2 \times (0.8 D + 4.8) + 2 \times 0.8}{32 n} \right] \frac{1}{n}$$

$$= D - (0.05 D + 1.9) \times \frac{1}{n}$$

The thickness of iron below the bottom of the thread, at the tube extremity, is empirically taken to be  $= 0.0175 D + 0.025$ . Hence the actual internal diameter  $d$  of any tube is found to be in inches,

$$d = D - (0.05 D + 1.9) \times \frac{1}{n}$$

$$= 2 \times (0.0175 D + 0.025)$$

or

$$d = 0.965 D - 0.05 - \frac{1}{n} - 0.05$$

For the various sizes of tubes, ranging from 1/4 inch to 10 inches nominal internal diameter, with their corresponding numbers of screw threads per inch, the actual internal diameter  $d$  is expressed by the following Table I in terms of the actual external diameter  $D$ .

Table I.—Diameters of Wrought-Iron Welded Tubes.

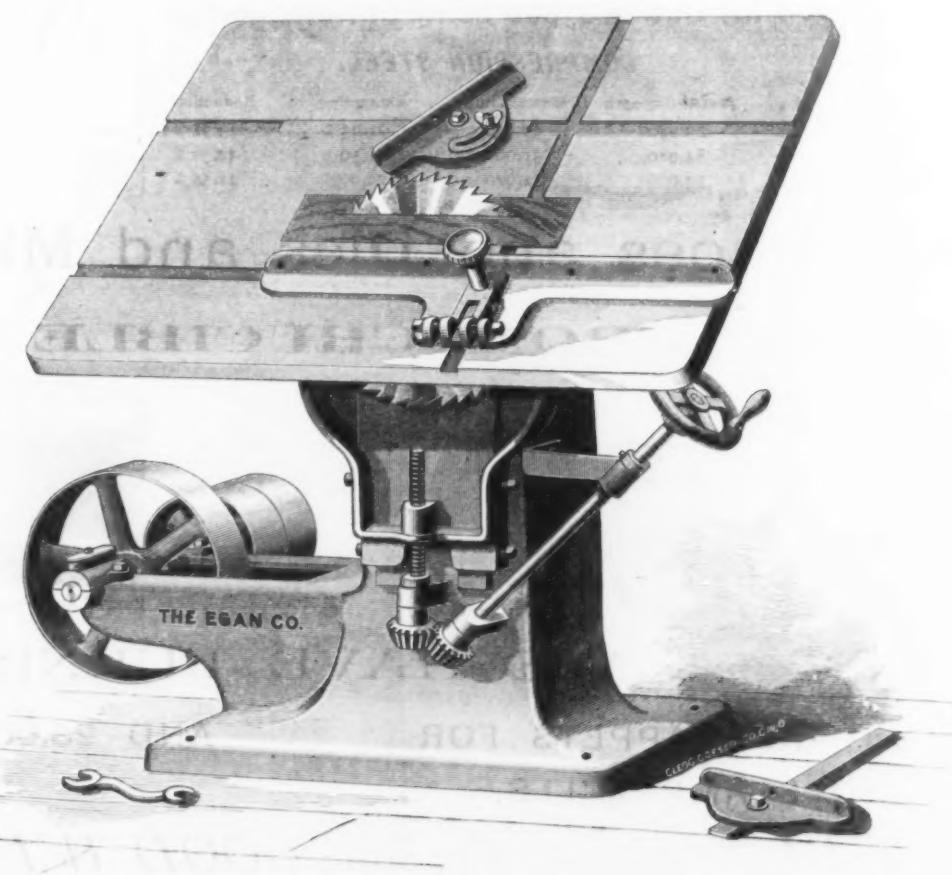
Nominal internal diameter of tube.	No. of screw threads per in.	Actual internal diameter $d$ in terms of actual external diameter $D$ .
1/4.....	No. 27	Inches. $d = 0.965 D - 0.1204$
1/2.....	14	$d = 0.965 D - 0.1536$
3/4 and 1.....	11 1/2	$d = 0.965 D - 0.1957$
1 1/4, 1 1/2 and 2.....	8	$d = 0.965 D - 0.2373$
2 1/2 to 10.....	8	$d = 0.965 D - 0.375$

The figures derived from this statement, which are of importance for practical use, are presented in detail in Table II in a convenient order for reference.

The number of screw threads per inch for the several sizes of tubes is here accepted from customary usage. It is the workman's approximation of the pitch practically desirable, and much reluctance must consequently be felt in calling it into question. Still it would have been better to investigate the general case upon the basis of a pitch ranging in closer accordance with the range of tube diameter. Thus the nominal 1/2 inch tubes might have had 16 threads per inch; 1/4, 14 threads; 1 and 1 1/4, 12 threads; 1 1/2 and 2, 11 threads; 2 1/2 to 3 1/2, 10 threads; 4 to 6 inch, 8 threads; 7 to 9 inch, 7 threads, and 10 inches not more than 6 threads per inch. The existing number of threads, however, as given in tables I and II, are now too well established to be disturbed; at all events they must be taken in any statement of present practice.

Without going into all the details which it was desirable to give in this report, it will suffice for our purpose to note that after an endless amount of correspondence, and the examination and test of many samples of threaded pipe, the several associations of manufacturers resolved to adopt and adhere to the original Briggs standard of gauges. Comprehensive information regarding the subject of standard pipe and pipe threads as applied in American practice is given in the Excerpt Minutes of "Proceedings" of the British Institutions of Civil Engineers (session 1882-83, Part I), containing the paper of the late Robert Briggs on "American Practice in Warming Buildings by Steam." Referring specially, however, to the matter here considered, we take from the report before us the following, from the text and tables of Mr. Briggs's paper, giving completely the date upon which the Briggs standard pipe thread sizes are based:

The taper employed for the conical tube ends is uniform with all makers of tubes or fittings, namely, an inclination of 1 in 32 to the axis. Custom has established also a peculiar length of screwed end for each different diameter of tube. Tubes of the several diameters are kept in stock by man-



IMPROVED VARIETY SAW, BUILT BY THE EGAN COMPANY, CINCINNATI, OHIO.

and steel, the great variety of work it can be adapted to, and the precision and accuracy with which it can be handled, the convenience of adjustment, and the strength and durability of all its parts, stamp it as a standard machine for ripping, cross-cutting, beveling, cropping, grooving, mitering, &c.

The machine is self-contained, the frame being a cored pedestal supporting the table carrying the counter-shaft. The table is of cast iron, well ribbed and braced, and can be set at right angles with the saw, or adjusted to any bevel up to 45°. The table is raised and lowered in planed, gibbed ways, with adjustment for wear. The mandrel is of best cast steel, and runs in self-oiling boxes. The fences can be used on either side of saw, giving the operator every advantage and convenience, especially when using the table on a bevel. This point will be appreciated by the practical sawyer. A 14-inch saw is generally furnished with the machine, and should run 3000. Furniture, chair and bracket factories, planing mills, carpenters, pattern and wood shops of all kinds will probably find this a desirable addition to their machinery, and a quickly-adjusted saw for almost any purpose. The counter-shaft is on the main frame.

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3750	66.230	43.420	27.00 %	48.83 %
3751	66.960	41.990	27.00 %	49.39 %

**COMPRESSION STEEL.**

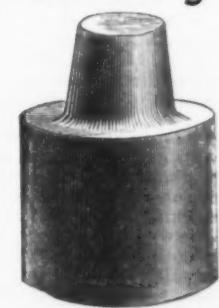
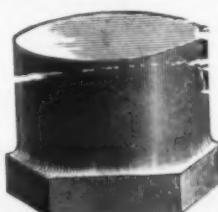
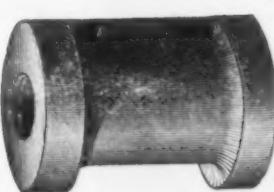
Blow.	Tensile Strength.	Elastic Limit.	Elongation.	Reduction.
1159	82.840	50.030	21.25 %	43.31 %
1161	84.980	51.060	21.50 %	42.37 %
1162	84.660	51.040	22.00 %	41.55 %

**RIVET STEEL.**

Blow.	Tensile Strength.	Elastic Limit.	Elongation.	Reduction.
3809	60.180	35.270	30.25 %	55.31 %
3814	55.990	35.000	33.25 %	63.16 %
3817	56.220	35.160	28.25 %	57.58 %

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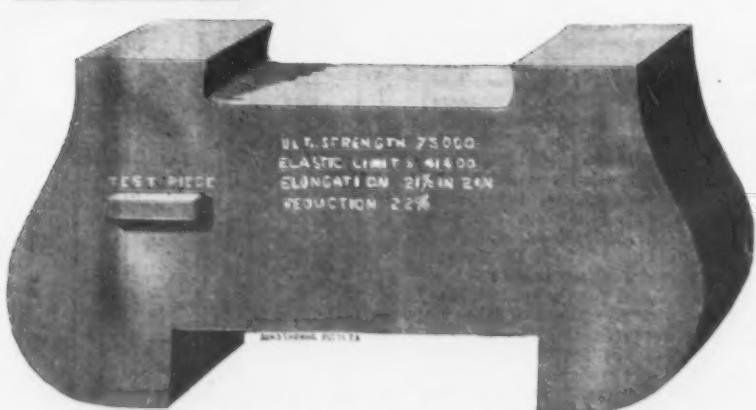
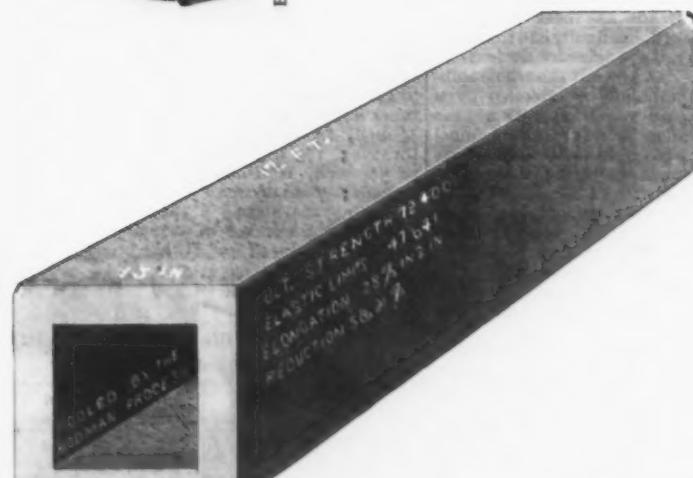
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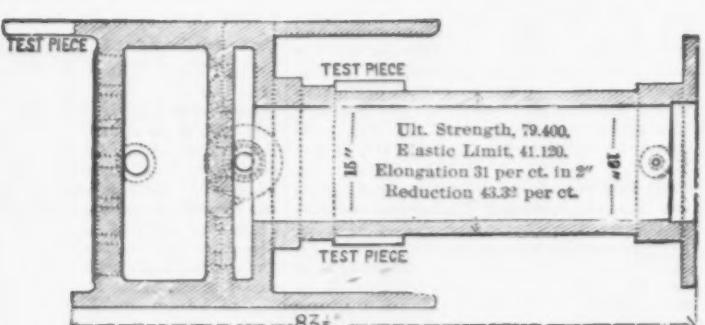
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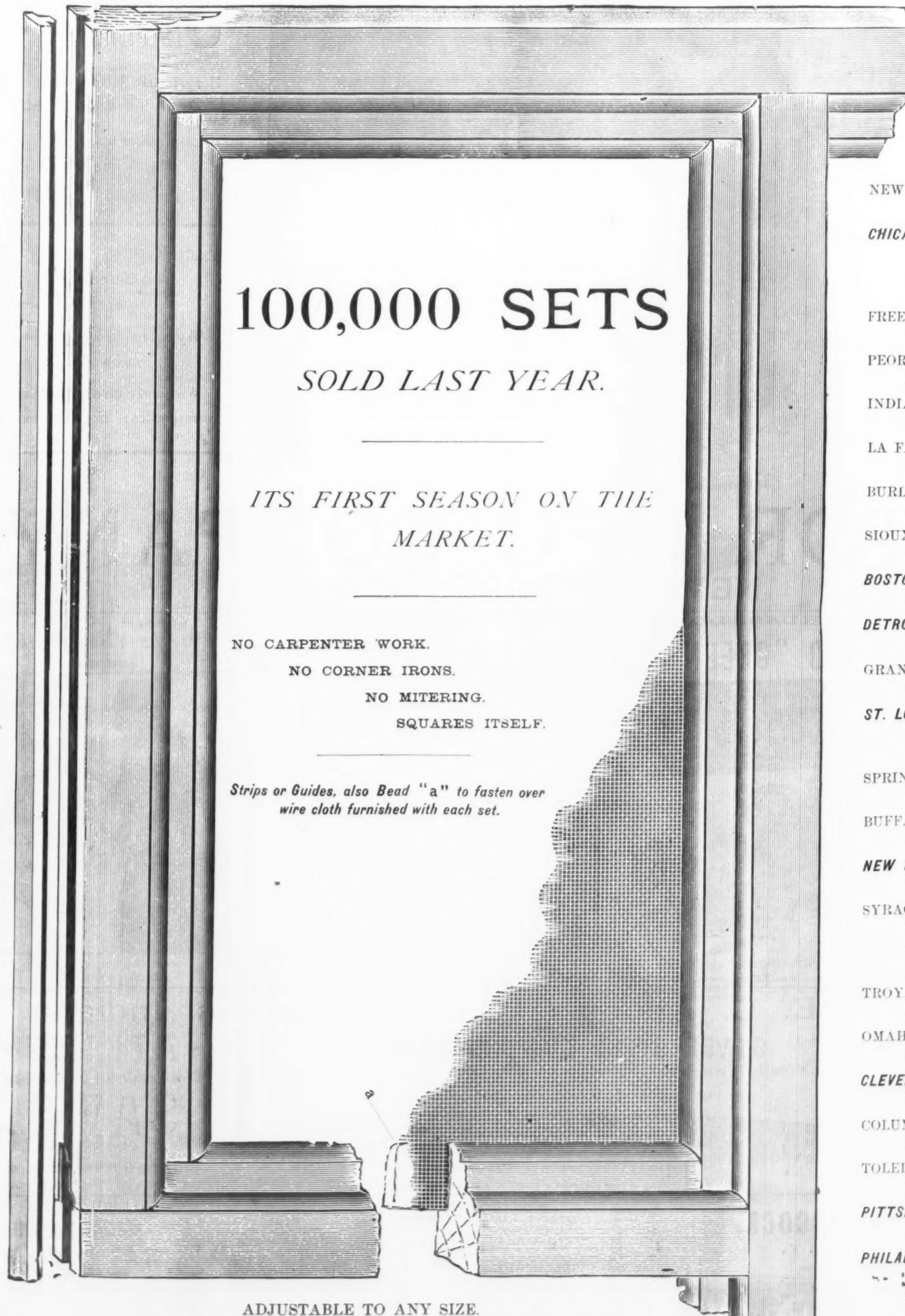
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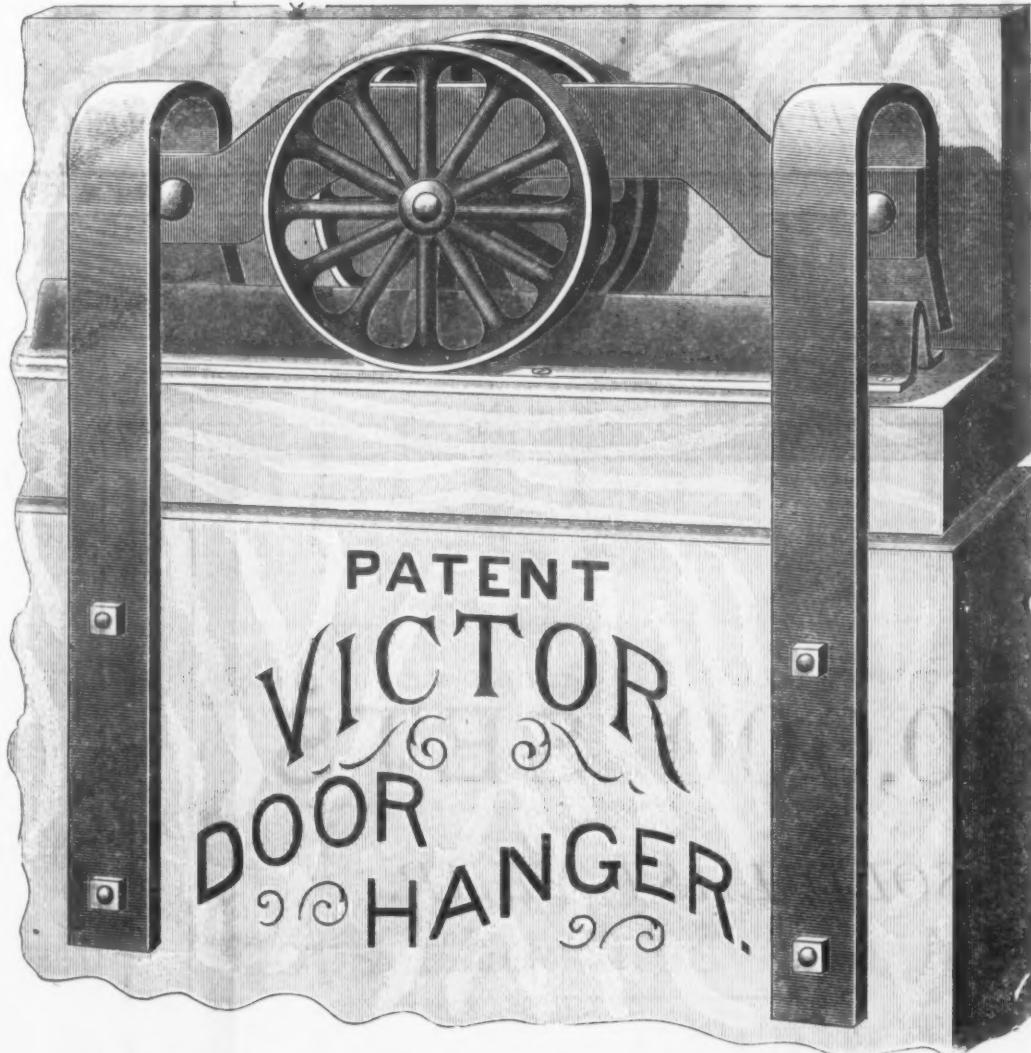
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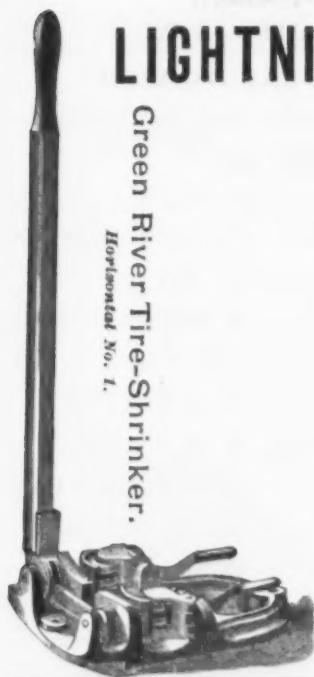
We solicit investigation and correspondence from the trade.

## VICTOR MFG. COMPANY, NEWBURYPORT, MASS.

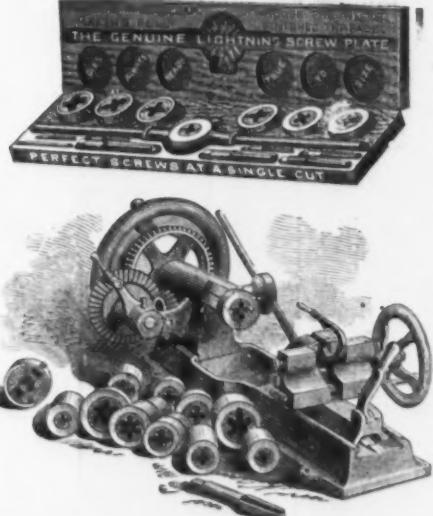
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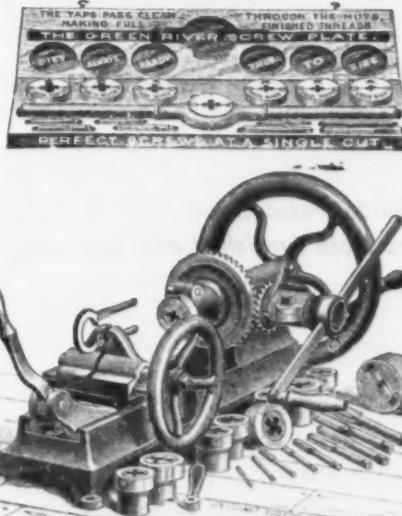


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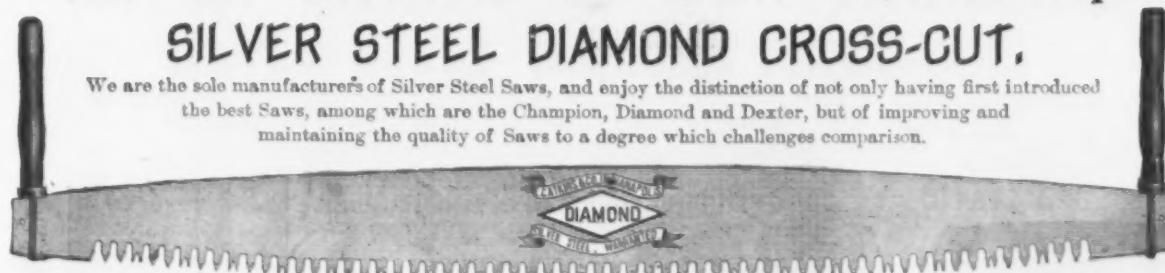
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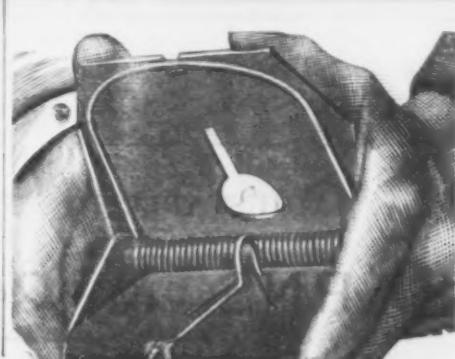
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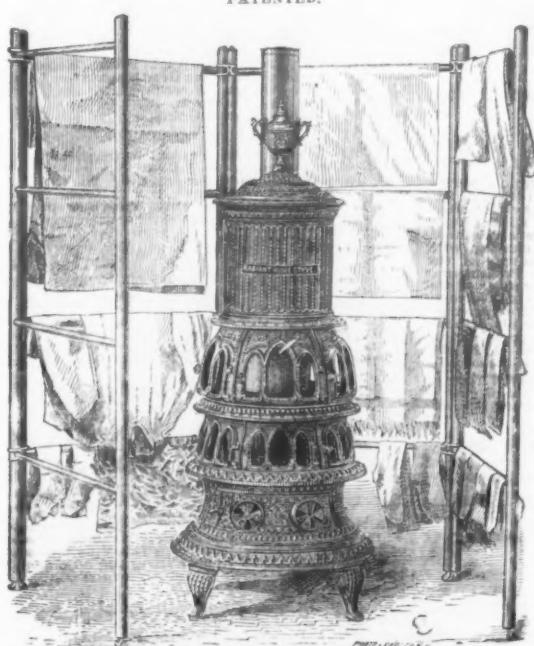
# THE F. F. ADAMS COMPANY, ERIE, PA.

## Patent Household Articles.

SEND FOR ILLUSTRATED CATALOGUE.

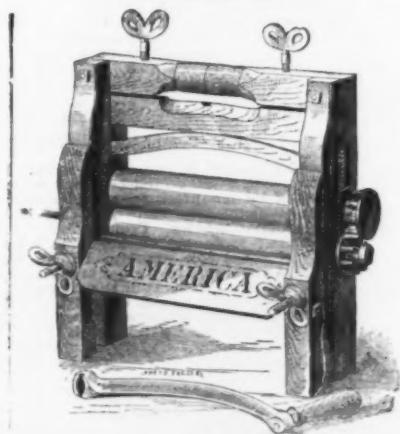
Reversible Clothes Horse.

PATENTED.



The American Wringer.

No. 8. FAMILY SIZE.



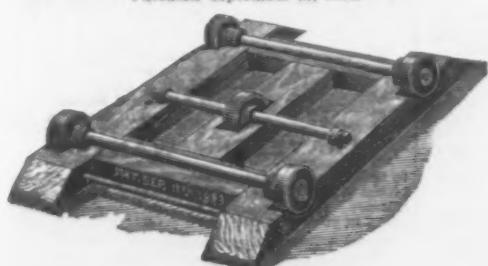
Lovell's Patent Extension Ladder.

Patented October 22, 1867, and August 4, 1874.

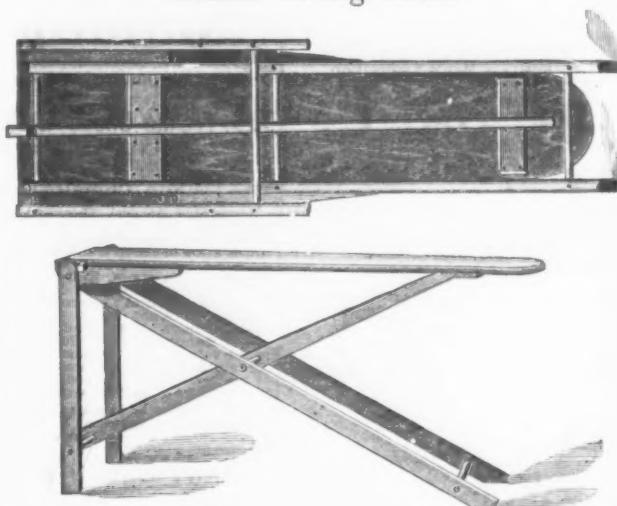


The Adams Iron Wheel Truck.

Patented September 21, 1883.

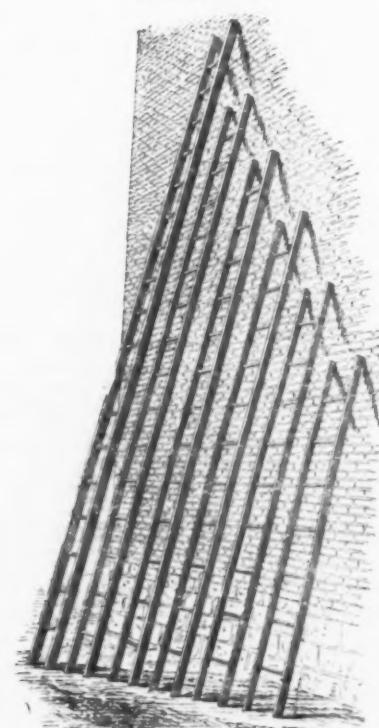


Adams Ironing Table.



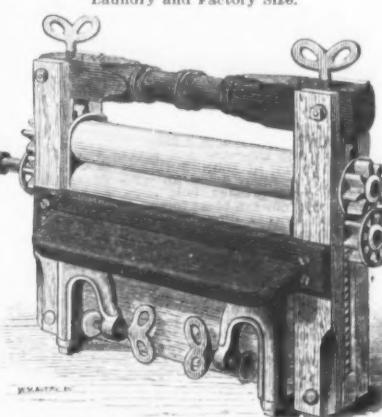
Common Ladders.

From 10 to 20 Feet.



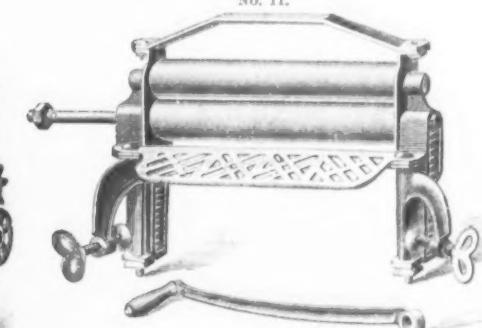
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Our New Style.

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Adams Swing.



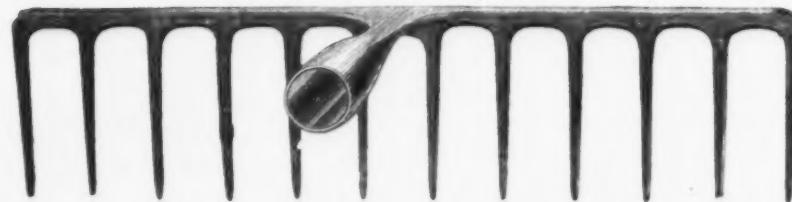
Lovell's Lock-Hinge Step Ladder.

Patented April 10, 1872, and March 11, 1873.



Keystone Socket Rake.

This is the only Socket Rake in the market.



Ideal Mouse Trap.



Cyclone Mouse Trap.

Patented November 6, 1883.



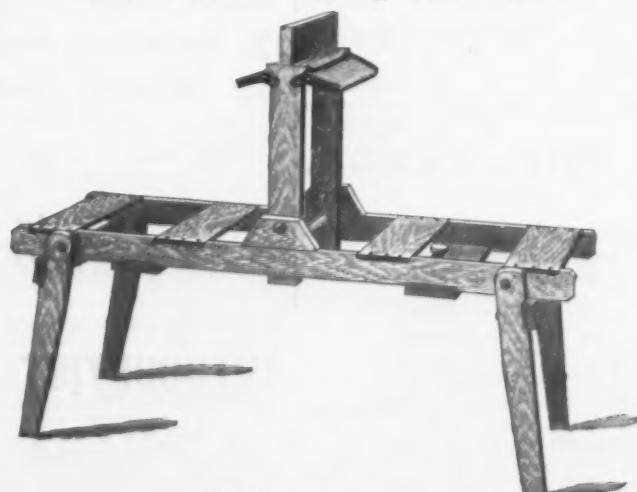
Adams Platform Truck.

SIX WHEELS.

The Jungbluth Lawn and Street Sprinkler.



Adams Double Folding Wash Bench.







# The Iron Age

AND METALLURGICAL REVIEW.

New York, Thursday, March 3, 1887.

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## The Halt in the Iron Market.

During the past two or three weeks there has developed in nearly every department of the iron and steel trades, and in almost all the leading centers, a halting tendency. Where a month ago all was activity, coupled with a good deal of anxiety to buyers, there is now considerable apathy. This is probably principally due to the fact that the uncertainty concerning the operation of the Interstate Commerce Bill is stopping all business for forward delivery to distant points, and secondarily, to a feeling of uncertainty as to where the next labor troubles will break out. The Knights of Labor have been beaten but are not subdued. There are those who profess to regard this dullness with some alarm, holding that it will establish lower values through the selling of weaker concerns, and that thus makers will be placed in an unfavorable position when the time for placing new contracts comes around. A positive notable decline has thus far taken place only in old rails, which possess the proud distinction of being the most speculative article on the list. Muck bar, which is to some extent affected by the fluctuations in old rails, has weakened in some localities, and in pig iron there have been occasional slight concessions from figures, which, however, represented transactions made under somewhat exceptional circumstances.

While a few in the iron and steel trades may have felt some disappointment at the temporary cessation of the upward movement, we believe that the majority are content with these latest developments. Consumers who have bought at the highest figures, and those whose main argument in asking an advance on their finished goods was the rise in raw material, may have some reason to growl. But on the whole their position is exceptional. The majority of those who convert iron or steel into higher forms covered the bulk of their requirements at comparatively low prices. The principal danger was that

sellers of coal and coke, labor, &c., demand prices based on current quotations of manufactured products, forgetting or ignoring that order books were filled at lower figures. A good illustration of this is furnished by the steel rail industry. There is no question whatever that, on an average, the mills are getting not much if anything more than \$34 at Eastern mill for the work of the first six months of 1887, while to-day sales are being made on the basis of about \$38.50 and \$39 to fill a few gaps. In a less striking degree this is true of other lines also. It will be understood, therefore, how embarrassing the position of manufacturers is apt to be when demands come before them for higher wages, higher prices for raw material, &c. To them a stationary market affords an opportunity to clear away old orders at lower rates and fill their books with new contracts at prices approaching more closely the advance which has taken place in the meanwhile. In another direction, too, a pause is likely to have salutary results. It has shaken out the weak speculative element and will teach caution to the stronger ones. On the whole, speculation has been limited thus far, and those engaged in it have followed the comparatively conservative policy of being content with small profits rather than double up a purchase because the one proceeding it showed a profit on paper.

The position all round is so sound in every respect that the prevalent sentiment is against the idea that we are on the eve of a reaction, however slight. The conviction in general that it is merely a pause, which may or may not be soon followed by further upward turn. The points which indicate another advance all along the line are the heavily sold condition of all the leading works, the very moderate capacity available, and the fact that we are on the threshold of a season which always brings a heavy increase in business. Consumption is going on at an enormous rate, and there have been indications every day for the past few months that has exceeded the estimates of manufacturers. Again and again buyers who believed themselves well supplied have appeared in the markets to fill unforeseen gaps. The business throughout the country is heavy in every direction, although none of the conditions exist which might abnormally stimulate speculation. On the other hand, there is one great danger which is not as thoroughly realized in the West as it should be—that is, the peril attending a reaction abroad. The advance there has kept fairly abreast of our own, without, however, being sustained as directly as with us by a heavy increase in the consumption. It has been quite largely the creature of speculation, and, therefore, is far more likely to be followed by a sharp reaction. If the latter did come it would be the signal for large sales to this country, forcing domestic manufacturers to the same basis.

## Manufacturers' Mutual Insurance.

One of the most suggestive documents received for some time is the report of the Associated Factory Mutual Insurance Company for the year 1886, bearing the signature of Mr. Edward Atkinson, of Boston, to whose activity in connection with the protection of factories against fire our column have often borne witness. The 17 companies who are members of the association named took risks aggregating \$138,596,159, for which the premiums received in cash amounted to \$3,902,163.80, of which \$1,412,200.97 were returned in policies cancelled.

The losses incurred footed up to \$1,101,620.16, the losses unpaid, partly estimated, being \$99,047.10. The premiums on policies terminated in 1886 were \$3,485,827.86, of which \$2,708,867.50 were returned in the form of dividends.

The results of the steady improvement in the safeguards against fire are well shown in the gain in dividends, which are tabulated as follows:

	Per cent. average.
Dividend up to December 31, 1878.....	60.925
Dividend, eight years since December 31, 1878.....	68.29
Dividend 1884, 1885, 1886.....	73.25
Dividend, 1886.....	77.71

This increase has taken place in spite of concessions in rates of premiums in consideration of the additional safeguards called for, concessions which are computed roughly to have aggregated \$1,500,000 during the past few years. From the date of their organization, which in one case reaches back as far as 1835, to the end of last year, the average cost of insurance for the 18 companies was 30 cents on each \$100 of risks taken, or 34.37 per cent. of the premiums received. Some of the individual companies show even better results. Thus, the Boston Manufacturers' Mutual Fire Insurance Company, of which Mr. Atkinson is president, showed a ratio of dividends to premiums earned for the eight years, from 1879 to 1886, both inclusive, of 70.67 per cent.; for the last three years the average was 75.55 per cent., and for the year 1886 it rose to 83.04 per cent., the average rate of premium charged upon policies issued during the last three years being a fraction over 82 cents on each \$100 insured. The actual cost of insurance to members during the entire life of the company, 36 years, was only 21.04 cents on each \$100 of risk taken. The aim of the managers is to raise the standard of adequate protection, and to aim rather at returning large dividends than at lower rates of premium, in order to maintain a strong

position financially. The income derived from the investment of premiums sufficed to cover over 70 per cent. of the expenses and taxes of all the mutual companies. It is hoped in this way to reduce the losses to those absolutely unavoidable, so that the cost may come down to somewhere between 10 and 15 cents per \$100 insured.

Among the members of the Boston Company are a large number of the best known manufacturers of hardware, iron and steel, copper, brass, machinery, arms, &c., in New England and some in the Middle States. Among others we note Underhill Edge Tool Company, E. & T. Fairbanks & Co., J. Gould & Son, Ames Sword Company, American Tool and Machine Company, American Waltham Watch Company, Chapman Valve Mfg. Company, Clinton Wire Cloth Company, Hinckley Locomotive Company, Norway Steel and Iron Company, Taunton Copper Mfg. Company, United Brass Company, Washburn & Moen Mfg. Company, American Screw Company, Rhode Island Locomotive Company, Benedict & Burnham Mfg. Company, Bradley & Hubbard Mfg. Company, Bridgeport Brass Company, P. & F. Corbin, Eaton, Cole & Burnham Company, Hartford Machine Screw Company, Holmes, Booth & Haydens; Landers, Frary & Clark; Meriden Malleable Iron Company, Norwalk Lock Company, Osborne & Cheeseman Company, Sargent & Co., Stanley Rule and Level Company, Waterbury Clock Company, Wilcox Silver Plate Company, Winchester Repeating Arms Company, Yale & Towne Mfg. Company, Holly Mfg. Company, Schenectady Locomotive Works, Silsby Mfg. Company, Troy Steel and Iron Company, Camden Iron Works, Cooke Locomotive and Machine Company, Gloucester Iron Works, Burnham, Parry, Williams & Co.; Enterprise Mfg. Company, M. Diston & Sons, Midvale Steel Company, Wm. Sellers & Co., Sheldon Axle Company, Wm. Wood Company, Edge Moor Iron Company, and Fusey & Jones Company.

The acceptance of the principles of mutual insurance by such a number of concerns so prominent in their respective lines would be a strong endorsement of them were it really needed. Their success is the result of a progressive spirit in introducing the best appliances for protection available, with the advice and under the guidance of experts. In the reports of fires of the Boston Manufacturers' Company we find a paragraph which may give some concern to the users of natural gas. Speaking of a fire which occurred at the National Tube Works, the report states: "In consequence of the losses by fire from natural gas, and owing to the fear that while the use of this gas within the insured premises might perhaps be put under control, yet it might not be possible to secure indemnity from loss by fire originating in adjacent premises, all the risks upon works in which the natural gas is used have been terminated, and this company, with all other mutual companies, have withdrawn from this class of risks." It is to be supposed that those districts chiefly affected by this decision will organize mutual companies of their own.

The disappearing-turrets for war purposes recently proposed both here and abroad have been made a subject of some interesting correspondence, which shows them to be of much older origin than is generally supposed. We refer to a letter by Mr. Beverly Kennon, of Baltimore, published in the New York *Herald*, a short time ago, according to which he appears to be entitled mainly to the credit of having first suggested and carried into practice the idea of disappearing guns and carriages mounted in circular pits. The first arrangement of this general character, we are told, was made on Jamestown Island, Va., in May, 1861, Mr. Kennon, who at that time was in the Confederate service, having dug a conical pit in which he mounted an 8-inch gun. The piece was so mounted on a platform at the bottom of the pit that when pivoting the muzzle was just clear of the ground. In this way an all-round fire was secured. In 1861 and 1862 guns mounted at several other points were similarly treated, the pits, however, having been dug deep enough to admit of embrasures. But it was not until Mr. Kennon went to Egypt, where he was Colonel of Coast Defenses, that he perfected his counterpoise battery. This, he explains, was entirely sunk below the surface of the ground, its guns, magazines, garrison, &c., being always out of harm's way except during the few seconds when the gun was elevated above the ground level to be pointed and fired. Practical tests during the bombardment of Alexandria a few years ago showed the design to be of unquestionable value, and should before this have suggested the desirability of giving the system further attention. In point of simplicity and low cost, both important factors in the problem of national defense, it seems to satisfy all reasonable requirements, and a comparatively very moderate outlay on the part of the Government would no doubt bear good fruit. The fact that what seems to be Mr. Kennon's original plan has, moreover, been commended by many prominent military authorities adds to the weight of its claims to recognition. In France we note a disappearing-turret known as the Moughin cupola is shortly to be tried at Chalons, and the results which will there be obtained are awaited with interest.

## The Western Nail Trade.

The Western Nail Association doubtless meant well in advancing the card rate for nails as rapidly as has recently been done. Cut nails have for some time been relatively much lower in price than most other iron and steel products. Muck bar and steel slabs could be worked into other forms at greater profit than into nails. Of course not every nail factory is advantageously situated for the disposal of its partly-worked material in some other form than nails. When there is but little demand for nails many factories are obliged to restrict production in all departments. And when there is no profit in the manufacture of nails, by reason of the increased cost of pig iron and old iron, higher wages and dearer freights, many of them find it best to suspend production entirely until matters are readjusted. Under existing circumstances the Western Nail Association, presumably acting for the greatest good of all its members, is endeavoring to so regulate prices as to secure a fair profit on the manufacture of nails, and therefore advances the card rate to a remunerative point. The omission to advance prices still further at last week's Pittsburgh meeting would indicate either that the remunerative point had been reached and the nail manufacturers were satisfied or that other considerations had operated to govern their decision. Now, was the previous action of the association in rapidly advancing the card rate wise or otherwise? Let us inquire into the conditions prevailing.

It was certainly high time for a reaction to set in in nails. Steel rails had been soaring for several months; pig iron had made a very healthy start toward following suit; bar iron had lifted itself completely out of the rut in which it seemed hopelessly mired, and many other iron and steel products had taken their position in the grand upward movement, but nails lagged painfully in the rear. It was true they were somewhat handicapped in the race by the weight of the large quantity of kegs of wire nails which were made in 1886, and which displaced cut nails to that extent. But the growth of the country and its ever-increasing business, together with the higher cost of raw materials, should have offset the influences which tended to depress prices.

Now the manufacturers had an undeniably right to fix a price for their nails, and the time had evidently arrived when that price could consistently and with very good reason be pushed up a few points. But a somewhat different course was pursued. Some of the manufacturers, who were getting tired of carrying considerable stocks of nails, and who saw a dull period before them until the spring demand could be expected, sold large quantities to jobbers at prices which were very tempting in view of the appreciation in values to be seen almost everywhere else than in the nail trade. Others, who were apparently animated more by a desire to do business than to realize a profit, made heavy contracts at old prices for deliveries to jobbers in Chicago, and presumably at other Western distributing points, for a very considerable portion of this year. These very manufacturers then met in solemn convocation as the Western Nail Association and advanced the card rate by successive steps at each meeting until the price of nails is now about 65 cents per keg higher than it was at the beginning of winter, when the aforesaid heavy contracts were placed.

Is it surprising that under the circumstances there should be a feeling of uneasiness in the Western nail trade? If these large contracts for nails, which are now being filled, have been made directly with consumers or with local merchants, so that the nails would never be heard of again, their wisdom would be seriously questioned in view of the condition of general business. How much more foolish, then, do these transactions appear, when the sellers must have been absolutely certain that their own nails would in due time interfere with their own legitimate trade! For some time past the Western nail market has been very quiet so far as manufacturers are concerned. This is of course largely due to the season, which is not usually one of much activity in nails, but it is partly due to the fact that the control of the trade has been put into the hands of the jobbers, who are reaping the benefit of the high prices which the manufacturers have so kindly and even generously established for them. The jobbers are committing no wrong, and are not to be censured in the slightest degree, but the manufacturers who have squandered the patrimony with which Dame Fortune was ready to favor them are in an unavoidable position. There is hope for them in but one direction, and that is an unusually large spring demand. It must be of such proportions as to make the trade controlled by the jobbers insignificant. If this hope is not realized it is difficult to see how prices can be sustained at their present altitude throughout the West.

Systems of rope transmission for power purposes have been in use for many years, but it is only quite recently that they have given promise of being more generally recognized as a convenient and efficient means of accomplishing the ends for which they were designed. The results which have been obtained with them, it is true, have not always been of uniform excellence,

mainly, however, because designers have in some cases failed to recognize properly the requirements of good working. Where rope driving has been tried and has failed, examination has almost invariably revealed a disregard of correct principles of construction, and has shown nothing calculated to detract from the favor in which the system is held, especially where a continuous high speed is required. As regards the comparative cost of rope and other systems of gearing, and the average life of a rope of the kind ordinarily used in manufacturing establishments, it is difficult to get any precise data. As compared with leather belting, however, we have seen figures reflecting very favorably on rope transmission, the relative costs having been in the proportion of about eight to one. As to the life of a rope it has been roughly estimated that with proper usage it should not be less than about seven years. Cases where ropes have suddenly broken are, moreover, few in number, the risk in this respect being reduced to a minimum by the fact that any defects in a rope, arising either from wear or other causes, will show themselves long before the point of danger is reached. In mill districts, particularly, engineers have not been slow to avail themselves of these advantages, and with the cotton rope, which is there chiefly used, most satisfactory performances are recorded. It is but natural, under these circumstances, that the field of usefulness of rope gearing is gradually being extended—some enthusiastic supporters of the system having even gone so far as to advocate it to the exclusion of almost all other means. With wire-rope transmissions for outdoor use, and long spans, running up as high as 1100 feet, serious trouble has been found to arise from excessive vibrations of the rope. Careful management, however, has had the effect of almost entirely eliminating these disturbing influences, and instances are now not rare where such long spans are used with perfect satisfaction—that at Sibley College, Ithaca, N. Y., affording a good example. The span there, we believe, amounts to fully 1100 feet, and, with some modifications in the plan as originally put into practice, no difficulty has been encountered in obtaining good results.

## Speculation in the South.

The speculative craze which has taken hold of the South is reaching a point where the conservative element in that section should use every means in their power to bring about a return to reason. There is much temptation in helping along for the sake of making a turn which may lead to realizing some profit. We have reason to believe that the majority of those who are buying lands and taking stocks at enormously inflated figures do so with the conviction that they, at least, will be able to get out before the crash comes. That it must come sooner or later all but a few are quite willing to admit, but nearly everyone seems to feel that the bubble will stand just a little more pressure, thus contributing to the extent of the disaster which must inevitably come. Already the note of warning is being sounded in this section, and it will not be long before Northern capital will fight shy of investments in Southern property or enterprises. It will be answered that the great bulk of the funds which have given new life to the development of Southern resources have come from Southern capitalists. It may be granted that such is the case. But it is true also that the boom has been largely engineered with the hope of selling out to others, and the numerous schemes presented in Northern financial centers show that some aid is looked for in those quarters. The fact is, that, compared to the valuation at which they are held, the amount of money actually invested in real estate and plant is ridiculously small. The point has long been passed where investment ends and gambling begins. Those who may be willing to take extraordinary risks in order to secure exceptional profits may possibly do well in the South now, but those who are convinced that there are grand opportunities in that section of the country to participate in the profits which the development of its resources hold out, will wait until a reaction has shaken out the weak and has brought values down. No one will deny that the South has a grand future. Its past achievements prove that, and the magnitude of its resources make it certain that what has been done is only a feeble beginning. But any one who has calmly watched recent events will concede that the immediate future has been discounted over and over again.

The Treasury Department has just issued its 1886 report on the internal commerce of the United States, compiled under the direction of Wm. F. Switzler, chief of the Bureau of Statistics, by a number of special reports, one each for the States of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Kentucky, Mississippi and Louisiana. That report is full of suggestive figures concerning the industrial awakening of the South. Mr. Switzler in his review summarizes as follows:

Whatever speculation may be deduced from the exhibit here made or the lessons it may teach our statesmen, it will not be questioned that the reports furnish evidences of recuperative energy, and of material progress and development by the Southern people, unexampled in the history of

our civilization; in short, that the new and mightier South is rapidly emerging from the blight and desolations of the civil war and promises in short time to attain a high degree of prosperity. This marvelous development can be truthfully affirmed, not simply or chiefly in respect to railway transportation, or to mining or manufactures, but to every material interest of the South and to almost every section of it. The exceptional sections are those which are destitute of direct railway or water communication with the markets of the world. These, and these only, are yet to feel the forces which quicken the sluggish current of the old life, and these, no doubt, in a comparatively short time will hear the whir of the wheels that weave the web of towns. The contents of this report will be a revelation to the country, even to the Southern people themselves, for they disclose a wealth of opportunities for enterprise and industry which is unparalleled. The advantages of the South for agricultural pursuits, not simply for the cultivation of cotton, sugar, and rice, but for agricultural development in all its branches, and for manufacturing for mining the precious metals, for coal and iron (which are more substantial foundations of prosperity), for lumbering and for stock raising, are being appreciated by the people of other parts of the Union, and already thousands of enterprising immigrants from the North and West, and millions and even hundreds of millions of capital are pouring into the Southern States.

That picture of the South and its future is not overdrawn. It is not surprising that it should have given rise to the wildest hopes, but at the present time the ultra-sanguine element is unquestionably in the ascendancy, with the result that the South is cursed with wild land speculation which must ultimately do tremendous injury to its progress. We regret that the document from which we have quoted shows evidences in many places of the spirit which is going to do the development of that section harm. Again and again we meet, for instance, in the discussion of the mineral resources with those rose-colored statements that persistently ignore modifying facts. We need not dwell upon the particulars, but would simply warn the public against accepting them without further investigation. After all, the greatest danger to the South now lies in the land speculation craze on margins. It has gone beyond all reason and is carried on a very flimsy basis. While values nominally advance on 10 per cent. cash payments, the profits go on swelling enormously. But the slightest check in this upward movement will precipitate a decline, and then the nominal millions will shrink to a few paltry thousands. If only those who have been gambling were hurt, the matter would give little concern to any one else. But, as usual, honest enterprise and industry will have to suffer, and the development of the South will receive a set-back from which it will take years to recover. Managed conservatively, progress in the end would be far more rapid and of greater advantage to the South and to the entire country.

#### The Convict Labor Question.

The Illinois Legislature is seriously considering the question of convict labor, the political situation in that State requiring labor matters to be handled by the lawmakers with a great deal of circumspection. There is an outcry all over the State against the competition of convicts with free labor in certain lines of manufactured goods, and the problem for solution is how to provide convicts with employment, make the prisons self-supporting, and interfere the least with outside labor. One plan proposed was to purchase a complete printing plant and set the convicts to work printing school books to be supplied free to the public schools of the State. This plan was immediately knocked in the head by members of the printers' craft, who objected to their occupation being taught to a great body of convicts who would be out of prison shortly and would then compete for work in the printing offices of the State. Other propositions have been made which are not a bit more agreeable to the workingmen. It is the same old fight that has been witnessed in the Eastern States for many years.

The Legislative Committee having charge of the subject have, however, collected some interesting information from the prisons of other States relative to the methods in which convict labor is regulated. In all, 26 States with 36 prisons have reported. The systems in existence now—and these will embrace all the systems as such that have been in force since the reformation of the criminal has been seriously considered and labored for—are four in number, the lease, the contract, the piece-plan, and the public or State account system. The lease system is everywhere declared demoralizing in the extreme, and exists only in a few Southern States. The piece-price system has been declared by the Attorney-General of New York to be prohibited by the very act of the Legislature which prohibited the contracting of prison labor. The contract system must be abandoned. There remains, therefore, but one other plan, or system—namely, the public or State account system.

Of the 36 prisons reporting, 19 were opened on the State account plan, eight on the contract, four on the lease, four on building (for the State), and one with no record. The State account system was dropped by many because it was too expensive, and now only seven of these prisons are so operated, while 22 are operated on contract, four on lease, one on piece-price, and two are building prisons, which is virtually on State account. After all, expensiveness in operation seems to be the result which prison managers desire to avoid. They, as politicians, do not wish to be the channels through which taxation is imposed upon people generally for

the support of criminals. But if the payment of taxes for this purpose is to be avoided it can only be done by making the service of the convicts remunerative in some way, and no matter what method may be adopted for this purpose somebody will object.

There is a national association working on this problem also. It met in Chicago last week at the Grand Pacific Hotel, and is known as the Anti-Convict Contract Association. Among the members are manufacturers of agricultural implements, wagons, &c. They oppose the contract system, but the substitutes they have so far offered for it do not seem to be satisfactory or they would have been eagerly adopted. State authorities are so perplexed over this problem that they would be glad to have a solution ready made for them.

#### Twelve Years of Agricultural Export.

The Bureau of Statistics, at Washington, has just published the statistics of our export of domestic agricultural products during the fiscal years 1875 to 1886, both inclusive. From this table it appears that the export of live animals during this period of 12 years has fluctuated in a most remarkable manner. These fluctuations in the shipment of animals are brought about by the more or less demand for draft and other mules coming from Mexico and other countries south of us. These orders are executed from Texas and other Southern States. Provisions reached their maximum of export in 1881, which was \$156,808,000, having nearly doubled since 1875, since that time gradually declining till they nearly reached the same point during the last fiscal year. The ostracism to which the American hog has been subjected since 1881 by France and Germany has materially interfered with our export of hog products, of which those two countries took enormous amounts. Meanwhile production in this country has made no progress, while the consumption of hog products among us has been steadily increasing. The export of breadstuffs also reached its maximum toward the middle of the period named, amounting to no less than \$288,037,000, having risen to that figure from \$111,458,000 in 1875. A gradual decline ensued, bringing the report to only \$125,847,000 the last fiscal year. The competition of Indian wheat on the one hand, more abundant European grain crops on the other, and the comparatively high price that ruled on this side through speculation, were the main causes of this decline.

The following is the table we have prepared showing the entire movement:

Export of Domestic Agricultural Products from the United States. (Thousands of Dollars).

Fiscal year	1875.	1876.	1877.	1878.
Animals	\$2,673	\$2,430	\$3,325	\$5,845
Animal oils	160	174	301	1,004
Provisions	88,100	92,525	118,579	124,845
Breadstuffs	111,458	131,182	117,807	181,778
Fruits	1,684	927	2,957	1,378
Seeds	1,291	1,419	3,584	2,366
Textiles	100,729	102,081	171,157	180,143
Vegetable oils and oil cake	5,414	5,984	5,761	7,637
Miscellaneous	32,854	29,07	36,365	81,297
Total	\$430,307	\$456,118	\$459,734	\$501,193
Fiscal year	1879.	1880.	1881.	1882.
Animals	\$11,486	\$15,992	\$16,412	\$9,729
Provisions	111,173	840	619	488
Breadstuffs	119,463	182,496	156,308	122,020
Fruits	210,356	289,037	270,373	183,671
Seeds	1,916	2,091	4,440	1,550
Textiles	162,930	211,617	247,715	199,850
Vegetable oils and oil cake	6,649	9,516	7,798	6,728
Miscellaneous	30,446	32,715	25,308	24,761
Total	\$546,477	\$685,961	\$730,396	\$552,217
Fiscal year	1883.	1884.	1885.	1886.
Animals	\$10,789	\$20,293	\$11,567	\$12,519
Animal oils	418	1,120	531	719
Provisions	103,217	114,543	107,382	96,227
Breadstuffs	200,545	160,545	160,271	125,845
Fruits	8,006	1,746	3,516	3,806
Seeds	4,430	3,477	2,177	1,930
Textiles	247,351	197,018	301,979	205,562
Vegetable oils and oil cake	6,230	8,734	9,827	9,255
Miscellaneous	29,707	36,977	30,829	28,170
Total	\$619,299	\$536,314	\$530,172	\$484,956

#### Recapitulation.

1875.	\$430,307,000	1881.	\$730,396,000
1876.	456,118,000	1882.	552,217,000
1877.	459,734,000	1883.	619,299,000
1878.	500,000,000	1884.	536,314,000
1879.	546,477,000	1885.	530,172,000
1880.	685,961,000	1886.	484,956,000
Total.	\$3,114,785,000	Total.	\$3,453,323,000
Increase.	\$338,538,000		

The export of fruits, though also fluctuating, reached its maximum in 1881, when it was \$4,440,000, ending with \$3,308,000 last year. The export of cotton and other oleaginous seeds has to a considerable extent been ruled by the Mediterranean olive-oil crops, cotton-seed oil being a substitute for olive oil, hence the amount shipped has fluctuated in the most extravagant manner, being on the decline latterly. This is owing to the restrictive measures adopted in Italy and elsewhere against cotton-seed oil.

Europe is taking steadily clover and timothy on an enormous scale. Among the textiles shipped, wool and hemp figured to a small extent only, the bulk being cotton, of which we have shipped increasing quantities, while the price has of late years ruled low. Vegetable oils exported are cotton-seed oil and linseed oil, the bulk being the former. Our export of oil-cake has assumed an extraordinary volume. The chief article of export among miscellaneous ones referred to in the table is leaf tobacco. The amounts taken have depended mainly on the necessities of the various European government

monopolies in any one year. Thus, in 1880 the amount of tobacco shipped did not exceed \$16,379,000, against \$25,242,000 in 1875; the handsome total of \$27,158,000 was reached last year. In taking a general view of the entire movement during the 12 years we find that the last six, as shown in the recapitulation at foot, exhibit an increase of \$338,538,000, or 11 per cent. In other words, in spite of abundant European crops during the latter half of the period named, and the notable decline in prices all over the world, the result is satisfactory and highly encouraging, even assuming that the peace of Europe is observed, and that there is no extra war demand during the present year for American cereals.

The American Iron and Steel Association has published the statistics of the production of cut nails for 1886. Aside from the very great increase in the make which the figures show—from 6,066,815 kegs in 1885 to 8,160,973 kegs in 1886—their principal interest lies in the evidence of the great progress which steel has made as the material of which they are made. The change from iron to steel has been uneven, geographically considered. In the great Wheeling district the product consisted of 1,841,402 kegs of steel nails, and only 17,149 kegs of iron nails. With its greatest competitor, the Central Pennsylvania district, the figures are nearly reversed, there having been made only 142,179 kegs of steel nails and 1,347,303 kegs of iron nails. Yet the year 1886 was really one of preparation, outside of the Wheeling district, and the heavy demand for rails by making a supply of nail slabs scarce, tended to cut off those works not producing their own steel. Quite number of plants have been finished in 1886 or are now building, with the object of exclusively or partially supplying the raw material for steel nail manufacture. Among them is one in Massachusetts, one in Virginia, two in Pittsburgh, and several in Illinois and Ohio. Besides this considerable quantities of foreign slabs were bought for works in Pennsylvania and elsewhere, prior to the rise, of which a heavy percentage is being worked up during this first quarter of the current year. There is every prospect, therefore, that the percentage of steel, which was 30 per cent. of the total in 1886, will advance considerably during 1887. We have clearly pointed out that this movement entails a concentration of manufacture in the hands of fewer and larger producers. It will be readily understood, too, that it brings it to closer relations, in a manner which we pointed out recently, the nail trade, and that leading industry, the rail manufacture. Last year's make of steel nails must have called for at least 150,000 gross tons of slabs. Another point worthy of consideration is the progress of the wire nail. It is estimated that in 1886 the product was not less than 400,000 kegs, which would make the total make of cut and wire nails roughly 8,500,000 kegs, an enormous aggregate. Authorities in the wire trade claim that this year will see the product of that class of nails rush up to 1,000,000 kegs. While this statement will be received with reserve, the fact must be recognized that the contest of the future will be between the steel cut nail and the steel wire nail. It remains to be seen which is the cheaper form, all things considered, the nail plate or the wire.

#### WASHINGTON NEWS.

(From Our Regular Correspondent.)

WASHINGTON, D. C., March 1, 1887.

The Forty-ninth Congress, with all its delinquencies, has added some important measures to the statute books. Among those relating to revenue, finance, industry and labor are: The Oleomargarine Tax bill; the bill of last session for the increase of the navy; the Dingley bill for the relief of the shipping interest; the bill directing the Commissioner on Labor to investigate the subject of convict labor; the bill for the issue of \$1, \$2 and \$5 silver certificates; the legislation of trades union corporations; the Trade Dollar Redemption bill; the Interstate Commerce bill; the bill amending the act relating to immediate transportation of dutiable goods; the bill prohibiting Government officials from contracting out the labor of United States prisoners or convicts; the bill to prohibit the importation of aliens under contract to labor in the United States; the bill to establish agricultural stations [in the President's hands]; the bill to tax fractional parts of a gallon of spirits.

The following bills have failed: The Morrison, Randall and all other tariff schemes; the Bland bill, removing the restrictions from the coinage of silver; the National Bankruptcy bill; the investigation into the subject of labor troubles, strikes, &c.; the bill to refund to the States the direct war taxes; the South American reciprocity project; the Dunn Free Ship bill; the bill prohibiting a tax on commercial travelers; the Labor Arbitration bill; the Postal Telegraph bill; all bills in regard to national banks and finances; the bill to create a commission to test structural materials.

The following bills are pending and may become laws: The bill to create the Department of Agriculture and Labor with the proposed transfer of the Weather Bureau; the Canadian fishery retaliatory measures; the projects for the improvement of the army and navy.

#### AN EXTRA SESSION.

There is a general impression among persons in and out of Congress that the appar-

ent indifference of Mr. Randall and others who are in league with him to the fact that time is valuable, and greater expedition will be required in order to get through with the appropriations, is inspired by a desire to force an extra session. Their purpose in such a step would be to force the issue on the Speakership and to punish the Committee on Rules, which the Carlisle-Morrison wing control, for the dividing up of the business of the Committee on Appropriations at the beginning of the present Congress. The latter scheme was a direct hit at Randall. The maximum Democratic majority in the coming Congress is 14, including the independent or labor vote. This in itself would give the Randall men control of the organization, so far as the selection of a Democratic candidate is concerned. The protection Democrats will aggregate at least 50, and the tobacco tax repeal Democrats will bring the number up to 70. It will be seen, therefore, that the opposition to Carlisle's re-election is not mere blow. Both wings of the party, anticipating a tussle on the Speakership, have been conferring among themselves. The Randall men would like nothing better than to force the issue now. They fear delay may lessen their ability to draw recruits from the new members if the promises of the Carlisle men have a chance to work upon their vanity and ambition. The plan to begin with is to stay out of the Democratic caucus, and by that means feel at liberty to take an independent course. Without their votes the Carlisle men will not be able to carry the caucus nominee in the House. The Protectionist Democrats is not the nomination of Randall but a conservative man, possibly from the South, who could draw from Carlisle and who would be safe for a Committee on Ways and Means not wholly made up of the free trade of the majority. The friends of Speaker Carlisle have not been idle. Their conferences, however, have not disclosed an easy race by any means. In addition to all this, there is a cloud upon his title to his seat which will be marked by the Republicans for all that it is worth. The next 25 or 30 hours will determine whether we are to have an extra session.

#### THE INTERSTATE COMMERCE COMMISSION.

The President is still at work on the personnel of the Interstate Commerce Commission. He is experiencing much difficulty in securing persons who are suitable for these places by character, reputation and ability. He is determined to get the best material if he can. The New England influence appears to be united on president Clark, of the New York and New England Railroad. Colonel Morrison is booked for place, but efforts are being made to convince the President that he is not up to the requirements of the place. There will be a great deal in getting properly started. D. N. Cooley, of Michigan, is mentioned. An inquiry is now being made as to whether he is the same man who figured so notoriously in the Indian Commissionership about Andrew Johnson's time.

#### DUTY ON CHARCOAL IRON.

On an assessment of duty at the rate of 15 cents per pound on certain charcoal iron as flat rolled iron in coils of No. 9 gauge, the appeal was sustained fixing the duty at \$22 per ton for charcoal iron. By the Department's decision of March 28, 1885, it was held that "all iron bars, blooms, billets, or shapes of any kind in the manufacture of which charcoal is used as fuel, are subject to a duty of \$22 per ton, whether such rate is higher or lower than 35 per cent. ad valorem, that being the absolute rate of duty imposed by the statute." The Department is of the opinion that, under the wording

# Trade Report.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 2, 1887.

**Scotch Pig.**—The Scotch miners' strike is ending, and the Gartsherrie furnaces have been restarted. The market is weaker, Scotch warrants closing 43 1/2, against 44 1/2 last week. Makers brands are quoted as follows:

	Bid.	Asked.
U. S. 3.	100 1/2	100 1/2
U. S. 4%, 1891, coupon	108 1/2	109 1/2
U. S. 4%, 1907, coupon	128 1/2	128 1/2
U. S. Currency 6s, 1895	136 1/2	—
U. S. Currency 6s, 1896	139 1/2	—
U. S. Currency 6s, 1897	132	—
U. S. Currency 6s, 1898	134	—
U. S. Currency 6s, 1899	137	—

Carriage from Ardrossan to Glasgow is 1/2 ton.

**Cleveland Pig.**—The market is not as steady as it has been, quotations being 38/ for No. 1, 37/ for No. 2, and 35/ @ 35/ for No. 3 Foundry, and 34/6 for Gray Forge.

**Bessemer Pig.**—The market has weakened, the closing figures for W. C. Hematites, mixed lots, Nos. 1, 2 and 3, being 46/6 @ 48/6.

**Bessemer Blooms.**—These are unchanged, 7 x 7 inch Blooms being quoted, nominally, 80/.

**Manufactured Iron.**—The market shows some irregularity.

	£	s.	d.	£	s.	d.
Staff, Ord. Marked Bars	7	0	0	6	7	10
" Medium	6	0	0	6	10	0
" Common	5	5	0	5	10	0
Hoops, 20 W. G. and over	6	15	0	6	10	0
" Common Best	6	15	0	6	10	0
" Medium	6	0	0	6	10	0
" Common	5	5	0	5	15	0
Sheets, 20 W. G. and under	6	15	0	6	10	0
" Ordinary Best	7	5	0	8	0	0
" Common	6	5	0	7	0	0

**Steel Rails.**—The market is unchanged. There has been a sale of 10,000 tons delivery this year at New York. We quote £4. 5/ @ £4. 15/ for Ordinary sections, f.o.b. shipping port.

**Old Rails.**—The market is unchanged. We quote nominally 70/ for T's, c.i.f. New York, and 72/6 @ 75/ for D. H.'s, c.i.f. New York.

**Scrap.**—The market is unchanged, with Heavy Wrought, c.i.f. New York at 62/6 @ 65/.

**Copper.**—The market is unchanged, with Chili Bars at £39. 5/ @ £39. 10/ and Best Selected at £43. 15/ @ £44. 5/.

**Tin.**—This metal is a little steadier. We quote spot Straits, £101. 15/ @ £102. 10/ and Futures, £101. 10/ @ £103.

**Tin Plates.**—The market shows no change. We quote:

Tin Plates, 10x14, 1st qual. Charcoal	18/	19/
" 1st " Coke	15/	15/
" 2d "	15/	15/
" 3d "	15/	15/

**Spelter.**—This metal remains unchanged, with quotations at £14. 5/ @ £14. 7/6.

**Lead.**—We quote £12. 17/6 for Common English Pig.

**Freights.**—Steam freights from Glasgow to New York are lower, being 6/ @ 7/6.

## Financial.

Office of The Iron Age,  
WEDNESDAY EVENING, March 2, 1887.

The opening days of the spring months bring more lively expectations of reviving trade. While local business continues comparatively sluggish outside of the speculative markets, it is noticeable that in the West and at interior points generally the volume of exchanges, with rare exceptions, indicates more activity than at the corresponding date in 1886. In our local traffic, too, signs are encouraging. Extensive inquiry among the wholesale jobbers brings out the fact that spring prospects were rarely more favorable. In dry goods circles buyers are present from all sections. The outward movement of freight is no longer obstructed, so that the transportation lines, including the coastwise steamers report an active business, as a rule better than a year ago. Congress almost ceases to be a disturbing factor; the Interstate Commerce law is no longer a bugbear, foreign commerce appears to be on a wholesome basis, as shown by the official statement for January, the handsome excess of exports being due to heavy shipments of cotton and breadstuffs, and there is nothing in the financial horizon to cause uneasiness. Specie movements indicate some liquidation of stocks returned from Europe, but exports of gold during February were considerably less than in the corresponding month last year, and this week there is another decline in exchange, dismissing for the present all thought of a further efflux of the precious metals. Postal rates are 4.85 1/2 @ 4.85 1/2.

The Stock Exchange markets have been irregular. On Thursday speculation was buoyant, stimulated by buying on European account and a favorable report of the Pennsylvania Railroad. On Friday prices were strong and weak by turns. The Erie statement for January gave strength to all the trunk lines. Saturday's market was weak and irregular, and Union Pacific dropped on the passage by the Senate of resolutions to

investigate. The bank statement offered an opportunity for bear traders.

To-day the tone was decidedly strong, Richmond Terminal leading at 1 1/2 % advance. Quotations as follows: Canada Pacific, 61 1/2; Central Pacific, 36 1/2; Delaware, Lackawanna and Western, 135 1/2; Delaware and Hudson Canal, 101 1/2; Erie, 34; Lake Shore, 95 1/2; Missouri Pacific, 108 1/2; New York Central, 113; New York and New England, 61 1/2; New York, Susquehanna and Western, 12 1/2; New Jersey Central, 68 1/2; Oregon Transcontinental, 32 1/2; Pacific Mail, 55 1/2; Reading, 37 1/2; Richmond and West Point, 42 1/2; Union Pacific, 58 1/2; Western Union Telegraph, 74 1/2; Richmond Terminal, pref., 74 1/2.

United States bonds closed as follows:

	Bid.	Asked.
U. S. 3.	100 1/2	100 1/2
U. S. 4%, 1891, coupon	108 1/2	109 1/2
U. S. 4%, 1907, coupon	128 1/2	128 1/2
U. S. Currency 6s, 1895	136 1/2	—
U. S. Currency 6s, 1896	139 1/2	—
U. S. Currency 6s, 1897	132	—
U. S. Currency 6s, 1898	134	—
U. S. Currency 6s, 1899	137	—

On the London Stock Exchange activity was resumed in American securities and prices advanced, though slowly and hesitatingly, the public being doubtful as to the maintenance of peace.

The weekly bank statement showed a heavy decrease in surplus reserve, equal to \$4,086,200, so that this item now stands at \$11,393,000, against \$25,937,775 a year ago. In loans there was an expansion of \$1,063,500, while deposits are down \$4,316,000. With these exceptions the banks are reduced nearly to their legal limit of reserve. The demand for money in the West, with the pensions veto and failure of other schemes for depleting the Treasury, causes a hardening tendency. Commercial paper is liberally offered, but the banks are not in the market. We quote 60 @ 90 days endorsed bills 4 1/2 @ 5%; longer dates, 5 1/2 @ 6 1/2%. The Comptroller of the Currency has called for a statement of the condition of the National banks on February 28.

**Scotch Pig.**—The market is very dull, with occasional sales at a concession of lots on dock. We quote for round lots, to arrive: Coltness, \$22.75 @ \$23; Glengarnock, \$22.50; Shotts, \$22.50; Carnbroe, \$22; Clyde, \$21 @ \$21.50; Summerlee, \$22 @ \$22.50; Dalmellington, \$21 @ \$21.50, and Eglinton, \$21 @ \$21.25.

**Bessemer Pig.**—The market for Domestic Bessemer Pig has been quiet, and in Foreign no transactions of any magnitude have been reported. An inquiry has been in the market for 10,000 tons for Chicago, which was regarded as being intended as a hedge against a possible Coke strike. The agreement to submit the question of Coke workers' wages to arbitration will probably lead to the withdrawal of the inquiry. There has been some call for special brands, but without any business. We quote \$21 @ \$21.25 for Ordinary Foreign Bessemer.

**Spiegeleisen.**—The only transaction has been a sale of 1000 tons at private terms. We quote \$27.75 @ \$28 for 20% summer delivery, and \$28 @ \$28.50 earlier delivery.

**Bar Iron.**—The market is quiet, but without any considerable quantities offering, the majority of the mills being well booked ahead. We quote: Common, 2¢ @ 2.1¢; Medium, 2.10¢ @ 2.20¢, and Refined, 2.20¢ @ 2.50¢, in round lots on dock.

**Structural Iron.**—The market is quiet, as is usual at this time of the year so far as architectural work is concerned. Some large bridge contracts have been placed during the past few weeks. We quote according to quality, for Angles, 2.35¢ @ 2.50¢, delivered, and Tees at 2.75¢ @ 3¢, for round lots. Steel Angles are quoted 2.55¢ @ 2.70¢, according to quality. Store quotations remain 2.75¢ @ 2.85¢ for Angles and 3¢ for Tees. American Beams and Channels are 3.3¢ base from dock for all orders. There is a possibility of a further advance at no distant date, some of the Western makers of Beams advocating it.

The East-bound movement of flour, grain and provisions from Chicago and junction points for last week aggregate 42,785 tons. The statement shows an increase of 5743 tons over the previous week.

The annual report of Superintendent Paine, of the New York Banking Department, shows that the aggregate of the deposits held by the savings banks of the State on January 1, 1887, was \$482,486,730, a net increase during the year 1886 of \$25,436,180. The number of depositors on January 1, 1887, was 1,264,535, an increase during the year of 56,463. The dividends or interest paid to depositors for the year 1886 amounted in the aggregate to \$15,777,022.

The statement of the public debt shows a reduction of only \$1,436,782 for the month of February. The total debt is now \$1,719,633,978; deducting available cash leaves the net debt, February 1, \$1,332,408. 50. The number of depositors on January 1, 1887, was 1,264,535, an increase during the year of 56,463. The dividends or interest paid to depositors for the year 1886 amounted in the aggregate to \$15,777,022.

According to the Custom-House report the exports of specie for the week were \$1,684,000; total since January 1, \$4,303,000, compared with nearly \$10,000,000 for the same time last year. The imports were \$61,944, making a total since January 1 of \$3,537,223.

The imports at all the ports of the United States for the month of January, 1887, were \$51,956,252 in merchandise and \$4,587,481 in specie, making a total of \$56,543,733. The exports from the United States to foreign ports for the same month were \$71,530,356 in produce and merchandise and \$2,544,517 in specie, making a total of \$74,074,873. This shows a balance of trade for the month of January, 1887, of \$17,531,140 in favor of the United States. It would have been still larger but for the strike here, which delayed the loading of so many vessels.

## NEW YORK.

**American Pig.**—The market has been particularly quiet during the week under review, although the general situation is unchanged, remaining as strong as it ever has been. Far from being regarded with alarm or uneasiness, the lull in all lines is looked upon with some satisfaction by the leading men in the Iron trade, since it will have a quieting effect. The principal features are light stocks, well-filled order books and an enormous consumption, which shows every sign of being able to cope fully with the large output. There is therefore no anxiety whatever among sellers, and, so far as this market is concerned, no lowering of quotations, because the high prices reported from other centers were never general here. So far as the future is concerned, the opening of navigation will bring some business, and more buying will follow after the effects of the strike have worn off. The Interstate Commerce bill, too, checks all business for future delivery, the railroads declining to make any rates after the 1st of April, except subject to certain clauses on which shippers will not take any risks. North River Foundry Irons are available for summer delivery to regular customers at \$20 @ \$20.50 for No. 2 and \$21 @ \$21.50 for No. 1, Lehigh brands being difficult to obtain from first hands, and held at considerably higher figures by dealers, who ask \$22.50 for small lots of No. 1. No. 2 is a little more plentiful. Sales of Southern Irons are small. During the past 10 days a lot of 2500 tons of Southern Car Wheel Charcoal Iron, bought a year ago on speculation, has been absorbed by consumers, whose requirements are reported to be exceptionally heavy.

**Scrap.**—The market is easier, with foreign shipment quoted at \$23 @ \$23.50, and yard lots of No. 1 nominally \$24.75 @ \$25.

**Rail Fastenings.**—We quote Spikes 2.55¢ @ 2.70¢, delivered. Angle Fish Bars may be quoted 2.20¢ @ 2.25¢. Bolts and Square Nuts are 3.10¢ @ 3.20¢, and Bolts and Hexagon Nuts 3.25¢ @ 3.35¢.

**Old Rails.**—The market has been exceedingly dull, the only transaction spoken of being one 500-ton lot of spot Double Heads at Jersey City, to cover the requirements for immediate delivery for a mill which has thousands of tons contracted for. This sale has since been canceled. We note also a sale of about 500 tons of Bridges. Consumers are generally well provided with old material, some of them for many months to come, and some of them appear to have bought even beyond requirements. Thus a 200-ton lot of Double Heads, offered for resale by a Western mill, has gone into store. We hear of one lot of 5000 tons of Double Heads, for shipment, offered at \$24, as also one lot of 600 tons, and one lot of 3000 tons of T's, shipment, at \$23.50. While buyers are generally off, the majority of holders are firm and are seemingly content to await future developments, as any attempt to force sales now proves futile.

**Foreign Iron.**—The market is extremely dull, with prices weak and drooping. Bessemer has been sold at \$21 c.i.f., duty paid, at which figure it is now offered, but without finding new buyers. Spiegel is dull, and may be quoted at \$27.75 @ \$28 for 20%.

**Blooms.**—Market extremely dull for all descriptions, which may be quoted about as follows: Rail Blooms for shipment \$30 @ \$30.50, Nail Slabs at \$32 @ \$32.50; Sheet-Iron Billets, \$34 @ \$34; higher qualities for Boiler Plate, &c., \$38 @ \$44. American Blooms as follows: Charcoal Blooms, \$55 @ \$56; Runout Anthracite, \$47 @ \$48; Scrap Blooms, \$37 @ \$38, and Ore Blooms, \$36.50 @ \$37.

# Trade Report.

**Scrap Iron.**—Market dull, and under any pressure to sell prices would have to be shaded. Sales at about the following quotations: Cargoes of No. 1 Scrap, \$23 @ \$23.50, and for small lots Wrought Scrap, tide-water delivery, \$24; Selected do., \$25; No. 2 do., \$16 @ \$17; Turnings, \$15 @ \$16.50; Old Car Wheels, \$17 @ \$17.50; Old Steel Rails, \$21 @ \$22; Cast Scrap, \$16 @ \$17; do. Turnings, \$12 @ \$13; Old Fish Plates, \$20 @ \$30.

**Wrought-Iron Pipe.**—The general activity which has prevailed for the past month still remains the feature. There are orders booked two months ahead, and the general outlook is very promising. Prices are firm, with discounts as follows: Lap-Welded Black, 50%; Lap-Welded Galvanized, 32 1/2%; Butt-Welded Black, 32 1/2%; Butt-Welded Galvanized, 22 1/2%; Boiler Tubes, 42 1/2%.

**Nails.**—A temporary dullness is reported, but with the advent of milder weather this is expected to disappear. Price is well maintained at \$2.50, from store.

## Chicago.

Office of *The Iron Age*, 36 and 38 Clark St., Cor. Lake St., CHICAGO, February 28, 1887.

**Pig Iron.**—The month closes with a good feeling all round. Prices are stationary and the demand is fully as good as can be expected at this time. Speculative holders parted with some small lots during the past week at slight concessions, but the market was not disturbed. There is such a good, strong undercurrent to business that offerings of this kind are quickly absorbed. The volume of sales made was heavier than for the preceding week, and negotiations are in progress for large lots of Charcoal and Coke.

**Nails.**—Manufacturers' agents report the demand light. They are holding prices firmly, but have been able to make few sales. The jobbers, however, have been doing a good business. They report a steady demand from small buyers, with carload buying a little more active. Some of them have been making slight concessions on Iron Nails, but are holding Steel Nails up to quotations, which are \$2.85 for Steel, and \$2.65 for Iron, with 10¢ off in carload lots. Preparations are being made for a heavy trade in March. Jobbers quote Wire Nails at \$3.75 per keg, base.

**Barb Wire.**—The demand is brisk, and large quantities are being sold for immediate shipment. Manufacturers' agents say that their travelers report prices being sustained by their competitors. Jobbers will advance their rates this week to the manufacturers' scale, which is 3.75¢ in carload lots of Painted, 3.85¢ for less, and 0.75¢ extra for Galvanized.

**Hardware.**—The condition of trade continues about as it has been—very active, with firm prices. The advances made thus far have not been large on many kinds of goods, but in this way prices have been sustained, as there is no temptation to jobbers to undersell the manufacturers. Good round lots of Chains have been sold at only 1/4¢ per lb. advance on the prices ruling 30 days ago. Wagon and carriage Axles have been advanced 1/4¢ per lb. Thimble Skeins have also been pushed up 5¢. An advanced list for Steel Skeins will be out on March 10. The Chicago jobbers say they are filling all orders promptly, notwithstanding the great increase in business. If they find they are pressed, they hire more men, taking pride in dispatching business with celerity. The custom of interchanging goods also prevails, so that each house has the stocks of all other houses to draw upon, which is a great assistance to business in times of active trade, when assortments are easily broken, and gives the Chicago jobbing trade quite an advantage over many other Western business centers. At present stocks are in very good shape. A little trouble was caused by the recent strikes in New York, which delayed shipments, but no serious consequences resulted.

**Lead.**—An active demand resulted in sales of 7000 tons of Pig during the week at 4.3¢. Some holders are now asking 4.35¢.

**Heavy.**—Quotations continue the same as those given last week—viz., Ordinary Tool Steels, 8¢ @ 8.5¢; Specials, 13¢ @ 20¢; Spring, 3¢ @ 4¢; Sheet, 7¢ @ 11¢; Open-Hearth Machinery, 3¢ @ 3.25¢; Crucible Machinery, 5¢.

**Steel Rails.**—The local mills are now so full of orders that but little new business can be taken for delivery this season. Prices are therefore nominal.

**Old Rails and Wheels.**—Transactions in Rails have been very light. A few carloads comprise the total sales reported. Quotations range from \$27 to \$28. There are inquiries for a considerable quantity of Car Wheels, but not many were sold during the week. Quotations vary widely, some dealers reporting offers of Wheels at \$22, while others say they are unable to secure them at \$23. A small lot was sold early in the week at \$24.

**Scrap.**—The supply is accumulating and prices for many kinds are easier, except for Forge and Mill Scrap, which are in better demand. Quotations are as follows, per ton of 2000 pounds: Railroad Shop or No. 1 Forge, \$27; Railroad Track, \$22 @ \$23; Leaf Steel, \$21; Coil Steel, \$20 @ \$20.50; Locomotive Tires, \$23.50 @ \$24; Cast Bearings, \$10.50; Machine Turnings, \$14; Axle Turnings, \$16; Boiler Plate, \$18.50; Mill Iron or No. 1 Wrought, \$22; Light Iron or No. 2 Wrought, \$15; Machinery, Cast, \$17.50 @ \$18; Stove Plate, \$12.50; Old Axles, \$30; Horseshoes, \$23.50 @ \$24.

**Nails.**—Manufacturers' agents report the demand light. They are holding prices firmly, but have been able to make few sales. The jobbers, however, have been doing a good business. They report a steady demand from small buyers, with carload buying a little more active. Some of them have been making slight concessions on Iron Nails, but are holding Steel Nails up to quotations, which are \$2.85 for Steel, and \$2.65 for Iron, with 10¢ off in carload lots. Preparations are being made for a heavy trade in March. Jobbers quote Wire Nails at \$3.75 per keg, base.

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**Lead.**—An active demand resulted in sales of 7000 tons of Pig during the week at 4.3¢. Some holders are now asking 4.35¢.

## Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., CHATTANOOGA, TENN., February 28, 1887.

Nothing has occurred during the past week to disturb the even tenor of general business, and everything in a commercial sense appears to be moving along without any disturbing element to interrupt what may be considered "good times."

**Pig Iron.**—Prices have undergone no change since our last report, and from the nature of the demand and the transactions that are taking place it would seem that there is little danger of any advance, and that prices will remain about as they are for some time to come. Sales outside of old contracts for large round lots are being made at \$16 @ \$17 for No. 3 and \$19.50 @ \$20 for No. 1. The furnaces are now experiencing much inconvenience in the delays that are occurring in getting the railroads to transport their stock to the furnace, as well as take their Pig away. The severe rains that have prevailed for the last three or four weeks have had some effect upon the quality of Pig turned out; other than this they have all been doing well.

**Sheet Iron.**—Very little movement occurred in this line during the past week. Mill agents report their establishments pretty well supplied with orders, which will probably carry them along until the busy season sets in, so that they are not forcing the market, which is nominally as follows for Common Black, in carload lots, Chicago, usual terms: No. 27, 3.2¢; Nos. 25 and 26, 3.1¢; Nos. 22 to 24, 3¢; Nos. 18 to 21, 2.9¢; Nos. 15 to 17, 2.75¢; Nos. 10 to 14, 2.65¢. From store jobbers quote 3.4¢ for No. 27, 3.3¢ for Nos. 25 and 26, and 3.2¢ for No. 24. Galvanized Iron is very quiet. Manufacturers' agents quote to jobbers 62 1/2% off on Juniata, and 62 1/2% and 5% off on Charcoal, while jobbers quote 60% off on Juniata, and 60% and 5% off on Charcoal.

**Merchant Steel.**—The past week was unusually dull, which may be hardly accounted for by its being the last of the month. Comparing the whole of February with the corresponding month of last year, however, the volume of trade has been very

**Miscellaneous.**—The proprietors of the Round Mountain Furnace property in Alabama have concluded to put their furnace in blast on its present hearth; in the meantime they will get the material for a new lining and make some other repairs. This furnace, during the war, made some of the best Cold Blast Iron ever made in the United States, which was utilized by the Confederate Government in the manufacture of heavy ordnance. The ores are the Red Fossil and laying in veins about seven feet thick and analyze about 55 per cent. metallic iron.

## Cleveland.

CLEVELAND, February 28, 1887.

**Iron Ore.**—During the week just closed 18,764 tons of Ore were forwarded to the furnaces, against 9,150 tons in the same week last year. Sales of non-Bessemer Ores have increased during the week, and transactions in considerable amounts are said to have taken place as a result of the decreasing supply of the Bessemer quality. Some of the companies represented in this market have entirely sold their first estimates of this season's output, and several other companies have sold more than 60% of their total supply. Selling prices for Ores continue firm, and are unchanged from the figures given last week. Encouraged by certain concessions of the mine owners some vessel men are now asking \$2.10 from Ashland and \$1.60 from Escanaba for the season. The Ore men are in no mood to concede the points in difference. Already some hesitancy is noticeable on the part of the furnace men, and they are not pushing their demands for Ore. Any increase in the price of Ore consequent upon an advance in freight rates would certainly dead-lock the market. For No. 1 Specular and Magnetic Bessemer Ores quotations continue at \$6.50 @ \$7.25; for the same Ores, non-Bessemer, \$5.75 @ \$6.50; for Red Hematite Bessemer Ores, \$5.50 @ \$6; for Red Hematites, non-Bessemers, \$4.75 @ \$5.25; Gogebic Range Bessemer Ores are quoted at \$5.50 @ \$6.

**Pig Iron.**—The trade has been comparatively quiet during the week, reviving considerably toward the close, with indications of a brisk trade this week. Stocks for sale are lighter than they have been at any time for a year. Producers are holding firmly for the most advanced prices, and stoutly deny any indications of weakness. Charcoal Irons are not plentiful and the demand for them is animated. Nos. 1, 2, 3 and 4 are still quoted at \$24 @ \$25; Nos. 5 and 6 at \$23.50 @ \$24.50. For No. 1 Strong Foundry, \$22.20 @ \$22.70 are the minimum and maximum quotations, and for No. 1 American Scotch, \$22.25 @ \$22.75.

**Old Rails.**—The demand has increased during the week. Sales have taken place at \$28.25, but \$28 is an average quotation. Old Wheels have sold for \$21.70. All grades of Scrap Iron are in good demand.

**Coke.**—There is less complaint from the furnacemen about the limited supply. Prices are more firm. The total carrying capacity of the railroads is inadequate to supply the demand.

## Cincinnati.

CINCINNATI, February 28, 1887.

**Pig Iron.**—The local market for Pig Iron has continued quiet during the past week. A few dealers have noted a better inquiry for various kinds, but others have had no such experience, and it is certain there has been no increase in the volume of business in the aggregate. The statistical position is a very strong one, and the furnaces as a rule are encouraged to not only believe in a maintenance of the present range of prices, but to hope, if not expect, a further advance before the year is done. There are now about 145 furnaces in blast, and yet stocks have been reduced to such a point that at the present time there is little more than 16 days' supply in sight throughout the country, and in the States of Tennessee, Alabama and Georgia there is scarcely one week's supply at the furnaces. On the 1st of this month it was shown that stocks of Coke Iron were reduced during the preceding month 4,800 tons, and stocks of Charcoal iron reduced about 1,100 tons. The largest stocks are of Bessemer Iron, but deliveries are large and there are very few producers who are not considerably behind in filling orders. Buyers apparently take comfort in the fact that a number of new furnaces are building, and that production will be so increased in the future that higher prices are improbable and a lower level likely, and yet there are no furnaces under construction which can, under the most favorable circumstances, place its output upon the market during the current year. As to the future, the rapid growth and development of the country must be taken into account. With railroad construction expanding at the present rate, the consumption of Iron must increase, but in what proportion to the increased production the future alone must determine. The loud talk of foreign importations of Iron has also had a tendency to induce buyers to be indifferent, but an examination of the figures of foreign commerce shows that there was less Pig Iron imported during last January than there was during January, 1886. The increased note has been in tin plate, scrap, &c. The sales

here during the week have been for small lots, few, if any, over one and two hundred tons, of Ohio, Lake Superior, Bessemer and speculative lots of Southern Coke and Charcoal Iron. One lot of 1,500 tons of Lake Superior Iron is the only sale of magnitude reported in this section, but some round lots of Bessemer are reported sold in the West, and are on the point of consummation here. Prices have changed but little, and a firm tone prevails for all standard brands at the close. The prices of Pig Iron, as previously reported, are without essential change, and are about as follows for cash:

### Charcoal Foundry.

Hanging Rock, No. 1, \$24.50 @ \$26.00

Hanging Rock, No. 2, \$23.50 @ \$24.50

Southern No. 1, \$23.00 @ \$24.00

Southern No. 2, \$22.00 @ \$23.00

### Coal and Coke Foundry.

Ohio Soft Stonecoal, No. 1, \$21.00 @ \$22.00

Ohio Soft Stonecoal, No. 2, \$20.00 @ \$21.00

Southern Coke, No. 1, \$22.00 @ \$23.00

Southern Coke, No. 2, \$20.00 @ \$21.00

Ohio and West Pennsylvania Coke, No. 1, \$22.00 @ \$23.00

Ohio and West Pennsylvania Coke, No. 2, \$20.50 @ \$21.50

### Forge.

Strong Neutral Coke, \$20.00 @ \$20.75

Mottled, \$19.00 @ \$19.50

Southern Coke, \$19.50 @ \$20.50

### Car Wheel and Malleable Irons.

Southern Car-Wheel, \$27.00 @ \$28.00

Hanging Rock, Cold Blast, \$27.00 @ \$28.00

Standard Ohio Blackbands, \$26.00 @ \$27.00

Southern No. 2, \$22.25 @ \$23.75

Southern Silvery, \$22.00 @ \$23.00

Jackson County, Ohio Silvery, \$22.00 @ \$23.00

American Old Iron Rails, \$26.00 @ \$29.00

Old Wheels, \$26.00 @ \$29.00

**Coal.**—Supplies are almost as short in Steaming as in Coking Coal. In the local market Domestic Coals are a little more plentiful, mainly because of warmer weather. The Henry Ellen miners, who went out to force the reinstatement of a discharged man, have surrendered and resumed work.

## Detroit.

Charles Himrod & Co., dealers in Pig Iron, Detroit, Mich., report, under date of February 28, 1887, as follows: Beyond a few purchases of Lake Superior Iron the market has shown no very active features during the past week. While the demand and inquiry cannot be said to be very light, it is unquestionably lighter than it was some 30 or 60 days ago, and this falling off in demand shows in particular cases elements of weakness among smaller Iron makers who have held off at higher prices, but immediately that the demand seems a trifle off their change of purpose is perceptible. But these are in the minority greatly, as the majority of sellers, by comparing with other years, see that this is not a time for buying, but always a dull month. It is generally thought that the demand will be greater in the near future, and that prices will be stronger than at any time this year, and we repeat our quotations of a week ago, as follows:

### Charcoal Foundry.

Strong Neutral Coke, \$20.00 @ \$20.75

Mottled, \$19.00 @ \$19.50

Southern Coke, \$19.50 @ \$20.50

Forge.

Strong Neutral Coke, \$20.00 @ \$20.75

Mottled, \$19.00 @ \$19.50

Southern Coke, \$19.50 @ \$20.50

Car Wheel and Malleable Irons.

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Hanging Rock, Cold Blast, \$27.00 @ \$28.00

Standard Ohio Blackbands, \$26.00 @ \$27.00

Southern No. 2, \$22.25 @ \$23.75

Southern Silvery, \$22.00 @ \$23.00

Jackson County, Ohio Silvery, \$22.00 @ \$23.00



# Trade Report.

**Scrap Iron.**—Market dull, and under any pressure to sell prices would have to be shaded. Sales at about the following quotations: Cargoes of No. 1 Scrap, \$23 @ \$23.50, and for small lots Wrought Scrap, tide-water delivery, \$24; Selected do., \$25; No. 2 do., \$16 @ \$17; Turnings, \$15 @ \$16.50; Old Car Wheels, \$17 @ \$17.50; Old Steel Rails, \$21 @ \$22; Cast Scrap, \$16 @ \$17; do. Turnings, \$12 @ \$13; Old Fish Plates, \$29 @ \$30.

**Wrought-Iron Pipe.**—The general activity which has prevailed for the past month still remains the feature. There are orders booked two months ahead, and the general outlook is very promising. Prices are firm, with discounts as follows: Lap-Welded Black, 50%; Lap-Welded Galvanized, 32½%; Butt-Welded Black, 32½%; Butt-Welded Galvanized, 22½%; Boiler Tubes, 42½%.

**Nails.**—A temporary dullness is reported, but with the advent of milder weather this is expected to disappear. Price is well maintained at \$2.50, from store.

## Chicago.

Office of *The Iron Age*, 36 and 38 Clark St., Cor. Lake St., Chicago, February 28, 1887.

**Pig Iron.**—The month closes with a good feeling all round. Prices are stationary and the demand is fully as good as can be expected at this time. Speculative holders parted with some small lots during the past week at slight concessions, but the market was not disturbed. There is such a good, strong undercurrent to business that offerings of this kind are quickly absorbed. The volume of sales made was heavier than for the preceding week, and negotiations are in progress for large lots of Charcoal and Coke Irons. If a reasonable part of these negotiations result in sales, the position of the furnace companies will be very considerably strengthened. Southern Irons have been sought for during the week, and a number of 100-ton lots have been sold. Southern railroad companies have advanced freight rates 35¢ per ton, to take effect March 1. The new rate will be \$5.25 from Birmingham and \$5 from Chattanooga, to Chicago. But Southern furnace companies have not advanced their prices to correspond, quotations being unchanged. As far as can be foreseen at present, prospects are decidedly in favor of a continuance of good trade for the greater portion of the present year. The Lake Superior Iron Ore dealers report more Ore already sold for next season's delivery than was shipped from the mines last season. This is a state of affairs never before witnessed, and it indicates a very confident feeling among the furnace men who draw their supplies of Ore from the district mentioned. Stocks of Pig Iron are also lower at a large number of furnaces than they were on the 1st of January. Quotations are as follows on a cash basis, time rates being usually 50¢ per ton higher: Lake Superior Charcoal, Nos. 1, 2 and 3, \$24 @ \$25; Blackband Coke Softeners, \$24.50 @ \$25; Hanging Rock and Jackson County Soft, \$23 @ \$23.50; Straight Coke Foundry No. 1, \$23 @ \$24; No. 2, \$22 @ \$23; No. 3, \$21 @ \$21.50; Southern Coke Foundry No. 2, \$22.50 @ \$23.

**Bar Iron.**—Car-builders are in the market again to some extent, and the demand is improving from the smaller classes of buyers. In some cases inquiries for good round lots are being made, but quotations are usually only good until April 5, when the Interstate Commerce act goes into effect. A conspicuous feature of business is the pressure for deliveries, contracts not being filled as rapidly as they should be. Quotations range from 2.15¢ to 2.35¢ on cars and from 2.35¢ to 2.55¢ from store, according to quantity and quality.

**Structural Iron.**—A great deal of work is in sight, which will shortly have to be placed. Shapes are quoted as follows: Beams and Channels, 3.8¢ from store; Angles, 2.8¢ @ 3¢ from store, and 2.55¢ on cars; Tees, 3.25¢ from store; Universal Mill Plates, 2.67½¢ on cars. Plates are quoted as follows from store: Iron Tank, 2.8¢; Shell, 3.25¢; Flange, 4.25¢; Steel Shell, 3.5¢; Flange, 4.25¢; Fire box, 4.75¢.

**Sheet Iron.**—Very little movement occurred in this line during the past week. Mill agents report their establishments pretty well supplied with orders, which will probably carry them along until the busy season sets in, so that they are not forcing the market, which is nominally as follows for Common Black, in carload lots, Chicago, usual terms: No. 27, 3.2¢; Nos. 25 and 26, 3.1¢; Nos. 22 to 24, 3¢; Nos. 18 to 21, 2.9¢; Nos. 15 to 17, 2.75¢; Nos. 10 to 14, 2.65¢. From store jobbers quote 3.4¢ for No. 27, 3.3¢ for Nos. 25 and 26, and 3.2¢ for No. 24. Galvanized Iron is very quiet. Manufacturers' agents quote to jobbers 62½% off on Juniata, and 62½% and 5% off on Charcoal, while jobbers quote 60% off on Juniata, and 60% and 5% off on Charcoal.

**Merchant Steel.**—The past week was unusually dull, which may be hardly accounted for by it being the last of the month. Comparing the whole of February with the corresponding month of last year, however, the volume of trade has been very

heavy. Quotations continue the same as those given last week—viz., Ordinary Tool Steels, 8¢ @ 8.5¢; Specials, 13¢ @ 20¢; Spring, 3¢ @ 4¢; Sheet, 7¢ @ 11¢; Open-Hearth Machinery, 3¢ @ 3.25¢; Crucible Machinery, 5¢.

**Steel Rails.**—The local mills are now so full of orders that but little new business can be taken for delivery this season. Prices are therefore nominal.

**Old Rails and Wheels.**—Transactions in Rail have been very light. A few carloads comprise the total sales reported. Quotations range from \$27 to \$28. There are inquiries for a considerable quantity of Car Wheels, but not many were sold during the week. Quotations vary widely, some dealers reporting offers of Wheels at \$22, while others say they are unable to secure them at \$23. A small lot was sold early in the week at \$24.

**Scrap.**—The supply is accumulating and prices for many kinds are easier, except for Forge and Mill Scrap, which are in better demand. Quotations are as follows, per ton of 2000 pounds: Railroad Shop or No. 1 Forge, \$27; Railroad Track, \$22 @ \$23; Leaf Steel, \$21; Coil Steel, \$20 @ \$20.50; Locomotive Tires, \$23.50 @ \$24; Cast Bearings, \$10.50; Machine Turnings, \$14; Axle Turnings, \$16; Boiler Plate, \$18.50; Mill Iron or No. 1 Wrought, \$15; Machinery, Cast, \$17.50 @ \$18; Stove Plate, \$12.50; Old Axles, \$30; Horseshoes, \$23.50 @ \$24.

**Nails.**—Manufacturers' agents report the demand light. They are holding prices firmly, but have been able to make a few sales. The jobbers, however, have been doing a good business. They report a steady demand from small buyers, with carload buying a little more active. Some of them have been making slight concessions on Iron Nails, but are holding Steel Nails up to quotations, which are \$2.85 for Steel, and \$2.65 for Iron, with 10¢ off in carload lots. Preparations are being made for a heavy trade in March. Jobbers quote Wire Nails at \$3.75 per keg, base.

**Barb Wire.**—The demand is brisk, and large quantities are being sold for immediate shipment. Manufacturers' agents say that their travelers report prices being sustained by their competitors. Jobbers will advance their rates this week to the manufacturers' scale, which is 3.75¢ in carload lots of Painted, 3.85¢ for less, and 0.75¢ extra for Galvanized.

**Hardware.**—The condition of trade continues about as it has been—very active, with firm prices. The advances made thus far have not been large on many kinds of goods, but in this way prices have been sustained, as there is no temptation to jobbers to undersell the manufacturers. Good round lots of Chains have been sold at fully 5¢ per lb. advance on the prices ruling 30 days ago. Wagon and carriage Axles have been advanced 4¢ per lb. Thimble Skeins have also been pushed up 5%. An advanced list for Steel Skeins will be out on March 10. The Chicago jobbers say they are filling all orders promptly, notwithstanding the great increase in business. If they find they are pressed, they hire more men, taking pride in dispatching business with celerity. The custom of interchanging goods also prevails, so that each house has the stocks of all other houses to draw upon, which is a great assistance to business in times of active trade, when assortments are easily broken, and gives the Chicago jobbing trade quite an advantage over many other Western business centers. At present stocks are in very good shape. A little trouble was caused by the recent strikes in New York, which delayed shipments, but no serious consequences resulted.

**Lead.**—An active demand resulted in sales of 7060 tons of Pig during the week at 4.3¢. Some holders are now asking 4.35¢.

## Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., Chattanooga, Tenn., February 28, 1887.

Nothing has occurred during the past week to disturb the even tenor of general business, and everything in a commercial sense appears to be moving along without any disturbing element to interrupt what may be considered "good times."

**Pig Iron.**—Prices have undergone no change since our last report, and from the nature of the demand and the transactions that are taking place it would seem that there is little danger of any advance, and that prices will remain about as they are for some time to come. Sales outside of old contracts for large round lots are being made at \$16 @ \$17 for No. 3 and \$19.50 @ \$20 for No. 1. The furnaces are now experiencing much inconvenience in the delays that are occurring in getting the railroads to transport their stock to the furnace, as well as take their Pig away. The severe rains that have prevailed for the last three or four weeks have had some effect upon the quality of Pig turned out; other than this they have all been doing well.

**Finished Iron.**—The bar mills are running full of orders, with bars at \$2.20 and Fish Plate at \$2.10 @ \$2.15 and Standard Spike at \$2.75.

**Cast Pipe.**—The Chattanooga Pipe and Foundry Company report the demand far ahead of their capacity to meet and prices satisfactory.

**Miscellaneous.**—The proprietors of the Round Mountain Furnace property in Alabama have concluded to put their furnace in blast on its present hearth; in the meantime they will get the material for a new lining and make some other repairs. This furnace, during the war, made some of the best Cold Blast Iron ever made in the United States, which was utilized by the Confederate Government in the manufacture of heavy ordnance. The ores are the Red Fossil and laying in veins about seven feet thick and analyze about 55 per cent. metallic iron.

## Cleveland.

CLEVELAND, February 28, 1887.

**Iron Ore.**—During the week just closed 18,764 tons of Ore were forwarded to the furnaces, against 9,159 tons in the same week last year. Sales of non-Bessemer Ores have increased during the week, and transactions in considerable amounts are said to have taken place as a result of the decreasing supply of the Bessemer quality. Some of the companies represented in this market have entirely sold their first estimates of this season's output, and several other companies have sold more than 60% of their total supply.

Selling prices for Ores continue firm, and are unchanged from the figures given last week. Encouraged by certain concessions of the mine owners some vessel men are now asking \$2.10 from Ashland and \$1.60 from Escanaba for the season. The Ore men are in no mood to concede the points in difference. Already some hesitancy is noticeable on the part of the furnace men, and they are not pushing their demands for Ore. Any increase in the price of Ore consequent upon an advance in freight rates would certainly dead-lock the market. For No. 1 Specular and Magnetic Bessemer Ores quotations continue at \$6.50 @ \$7.25; for the same Ores, non-Bessemer, \$5.75 @ \$6.50; for Red Hematite Bessemer Ores, \$5.50 @ \$6; for Red Hematites, non-Bessemers, \$4.75 @ \$5.25; Gogebic Range Bessemer Ores are quoted at \$5.50 @ \$6.

**Pig Iron.**—The trade has been comparatively quiet during the week, reviving considerably toward the close, with indications of a brisk trade this week. Stocks for sale are lighter than they have been at any time for a year. Producers are holding firmly for the most advanced prices, and stoutly deny any indications of weakness. Charcoal Irons are not plentiful and the demand for them is animated. Nos. 1, 2, 3 and 4 are still quoted at \$24 @ \$25; Nos. 5 and 6 at \$23.50 @ \$24.50. For No. 1 Strong Foundry, \$22.20 @ \$22.70 are the minimum and maximum quotations, and for No. 1 American Scotch, \$22.25 @ \$22.75.

**Old Rails.**—The demand has increased during the week. Sales have taken place at \$28.25, but \$28 is an average quotation. Old Wheels have sold for \$21.70. All grades of Scrap from are in good demand.

**Coke.**—There is less complaint from the furnacemen about the limited supply. Prices are more firm. The total carrying capacity of the railroads is inadequate to supply the demand.

## Cincinnati.

CINCINNATI, February 28, 1887.

**Pig Iron.**—The local market for Pig Iron has continued quiet during the past week. A few dealers have noted a better inquiry for various kinds, but others have had no such experience, and it is certain there has been no increase in the volume of business in the aggregate. The statistical position is a very strong one, and the furnaces as a rule are encouraged to not only believe in a maintenance of the present range of prices, but to hope, if not expect, a further advance before the year is done. There are now about 145 furnaces in blast, and yet stocks have been reduced to such a point that at the present time there is little more than 16 days' supply in sight throughout the country, and in the States of Tennessee, Alabama and Georgia there is scarcely one week's supply at the furnaces. On the 1st of this month it was shown that stocks of Coke Iron were reduced during the preceding month 4800 tons, and stocks of Charcoal iron reduced about 1100 tons. The largest stocks are of Bessemer Iron, but deliveries are large and there are very few producers who are not considerably behind in filling orders. Buyers apparently take comfort in the fact that a number of new furnaces are building, and that production will be so increased in the future that higher prices are improbable and a lower level likely, and yet there are no furnaces under construction which can, under the most favorable circumstances, place its output upon the market during the current year. As to the future, the rapid growth and development of the country must be taken into account. With railroad construction expanding at the present rate, the consumption of Iron must increase, but in what proportion to the increased production the future alone must determine. The loud talk of foreign importations of Iron has also had a tendency to induce buyers to be indifferent, but an examination of the figures of foreign commerce shows that there was less Pig Iron imported during last January than there was during January, 1886. The increase noted has been in tin plate, scrap, &c. The sales

here during the week have been for small lots, few, if any, over one and two hundred tons, of Ohio, Lake Superior, Bessemer and speculative lots of Southern Coke and Charcoal Iron. One lot of 1500 tons of Lake Superior Iron is the only sale of magnitude reported in this section, but some round lots of Bessemer are reported sold in the West, and are on the point of consummation here. Prices have changed but little, and a firm tone prevails for all standard brands at the close. The prices of Pig Iron, as previously reported, are without essential change, and are about as follows for cash:

### Charcoal Foundry.

Hanging Rock, No. 1..... \$24.50 @ \$26.00  
Hanging Rock, No. 2..... 23.50 @ 24.50  
Southern No. 1..... 23.00 @ 24.00  
Southern No. 2..... 22.00 @ 23.00

### Coal and Coke Foundry.

Ohio Soft Stoncoal, No. 1..... 21.00 @ 22.00  
Ohio Soft Stoncoal, No. 2..... 20.00 @ 21.00  
Southern Coke, No. 1..... 22.00 @ 23.00  
Southern Coke, No. 2..... 21.00 @ 22.00  
Ohio and West Pennsylvania Coke, No. 1..... 22.00 @ 23.00  
Ohio and West Pennsylvania Coke, No. 2..... 20.50 @ 21.50

### Forge.

Strong Neutral Coke..... 20.00 @ 20.75  
Mottled..... 19.00 @ 19.50  
Southern Coke..... 19.50 @ 20.50

### Car and Wheel and Malleable Irons.

Southern Car-Wheel..... 27.00 @ 28.00  
Hanging Rock, Cold Blast..... 27.00 @ 28.00  
Hanging Rock, Warm Blast..... 24.50 @ 25.50  
Lake Superior and Malleable..... 26.00 @ 27.00

**Manufactured Iron.**—There has continued to be an active trade and a strong market, with full prices readily obtained. It is noted that one firm building furnaces in the South have distributed about 800 tons of work among Cincinnati foundries. We quote: Bar Iron, 2¢ @ 2.10¢; Charcoal Bar Iron, 3¢ @ 3.10¢; Sheet Iron, Boiled, Nos. 10 to 27, 23¢ @ 34¢; Sheet Iron, Charcoal, Nos. 15 to 25, 34¢ @ 44¢ per lb.

**Scrap.**—There has been little of any kind offered and prices are nominally unchanged. Wrought Scrap is quoted at 1¢ @ 1.20¢, \$5.75 @ \$6.50; for Red Hematite Bessemer Ores, \$5.50 @ \$6; for Red Hematites, non-Bessemers, \$4.75 @ \$5.25; Gogebic Range Bessemer Ores are quoted at \$5.50 @ \$6.

**Nails.**—Are selling fairly, and are firm at \$2.70 for Steel and \$2.50 for Iron, rod to 6d., and other sizes at proportionate rates.

## Birmingham.

BIRMINGHAM, ALA., February 28, 1887.

In the lines which by force of their sympathy with Iron were stimulated to abnormal activity during the recent upward movement, there is a perceptible falling off of business, and the market is remarkably heavy. Thanks to a considerable accession of motive power on the Louisville and Nashville road, freights are moving a little more freely. Freight trains are again able to run on their regular schedules, which for the last month or so have been so impracticable as to force their entire abandonment. Still, the movement of outgoing freights is impeded more or less, and Iron is accumulating somewhat uncomfortably at some of the furnace yards.

**Pig Iron.**—It is not easy to forecast the Pig Iron market from this point of view with the present lights. One hears that the market is scarcely so strong, but when he begins to look for evidences on this point he finds it only in correspondence and circulars from the trade centers. It is doubtful if the first transaction could be discovered in this whole district to sustain the theory of weakening prices. Still it is entirely credible that but for the heavy and irregular buying of the last three months or so ahead of the needs of the buyers Iron would now be a shade cheaper everywhere. As it is, with so many buyers stocked well ahead, those that are not so well provided do not seem able to find sufficient iron on the market to enable them to cover their shortage at any considerable cutting of prices. Only one concern in this district is selling in any volume, and this one has certain grades sold pretty well through the year. In the last 10 days it has booked orders for some 5000 tons, mainly of Mill Iron. In these transactions the prices were about up to the run of the market for the last month, No. 1 Mill netting \$16 at the furnace. At the present rate of production there will be no iron for sale at all in the district in a little while. The shortage of fuel becomes more and more serious, pending the completion of the large extensions under way at the Pratt mines. Both of the Sloss, both of the Eureka and one of the Alice furnaces are now banked in order to get a safe supply of Coke ahead.

**Finished Iron.**—Nothing has developed to vindicate the promises of a new advance in finished Iron, and on the surface there is no new significance in the present course of the market. Nails.—If the usual difference between prices of Steel and Iron Nails is a correct measure, the latter are a good purchase. The Steel article is stiff enough at the top price of \$3.07½ laid down here, while the Iron has not been able to sustain itself at the same advance. Iron Nails have been bought as low as \$2.65 and the intimations of the last few days are that they could be had a shade cheaper still.

**Miscellaneous.**—Negotiations now under way promise several new Iron-working enterprises in Bolts and Nuts and Corrugated Iron and other lines of about as much consequence. Then, still another Rolling Mill is talked of.

**Coal.**—Supplies are almost as short in Steaming as in Coking Coal. In the local market Domestic Coals are a little more plentiful, mainly because of warmer weather. The Henry Ellen miners, who went out to force the reinstatement of a discharged man, have surrendered and resumed work.

## Detroit.

Charles Himrod & Co., dealers in Pig Iron, Detroit, Mich., report, under date of February 28, 1887, as follows: Beyond few purchases of Lake Superior Iron the market has shown no very active features during the past week. While the demand and inquiry cannot be said to be very light, it is unquestionably lighter than it was some 30 or 60 days ago, and this falling off in demand shows in particular cases elements of weakness among smaller Iron makers who have held off at higher prices, but immediately that the demand seems a trifle off their change of purpose is perceptible. But these are in the minority greatly, as the majority of sellers, by comparing with other years, see that this is not a time for buying,



## THE IRON AGE.

**Lawn Mowers.** Standard Machines...dis 50&5% Cheaper Machines...dis 50&10% @ 50% Cotton & Linen Fish, Drapers'...dis 50% Draper's Chalk...dis 50% Draper's Mason's Linen, 84 ft., No. 1, \$1.20; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25; No. 6, \$3.75; No. 7, \$4.25; No. 8, \$4.75; No. 9, \$5.25; No. 10, \$5.75; No. 11, \$6.25; No. 12, \$6.75; No. 13, \$7.25; No. 14, \$7.75; No. 15, \$8.25; No. 16, \$8.75; No. 17, \$9.25; No. 18, \$9.75; No. 19, \$10.25; No. 20, \$10.75; No. 21, \$11.25; No. 22, \$11.75; No. 23, \$12.25; No. 24, \$12.75; No. 25, \$13.25; No. 26, \$13.75; No. 27, \$14.25; No. 28, \$14.75; No. 29, \$15.25; No. 30, \$15.75; No. 31, \$16.25; No. 32, \$16.75; No. 33, \$17.25; No. 34, \$17.75; No. 35, \$18.25; No. 36, \$18.75; No. 37, \$19.25; No. 38, \$19.75; No. 39, \$20.25; No. 40, \$20.75; No. 41, \$21.25; No. 42, \$21.75; No. 43, \$22.25; No. 44, \$22.75; No. 45, \$23.25; No. 46, \$23.75; No. 47, \$24.25; No. 48, \$24.75; No. 49, \$25.25; No. 50, \$25.75; No. 51, \$26.25; No. 52, \$26.75; No. 53, \$27.25; No. 54, \$27.75; No. 55, \$28.25; No. 56, \$28.75; No. 57, \$29.25; No. 58, \$29.75; No. 59, \$30.25; No. 60, \$30.75; No. 61, \$31.25; No. 62, \$31.75; No. 63, \$32.25; No. 64, \$32.75; No. 65, \$33.25; No. 66, \$33.75; No. 67, \$34.25; No. 68, \$34.75; No. 69, \$35.25; No. 70, \$35.75; No. 71, \$36.25; No. 72, \$36.75; No. 73, \$37.25; No. 74, \$37.75; No. 75, \$38.25; No. 76, \$38.75; No. 77, \$39.25; No. 78, \$39.75; No. 79, \$40.25; No. 80, \$40.75; No. 81, \$41.25; No. 82, \$41.75; No. 83, \$42.25; No. 84, \$42.75; No. 85, \$43.25; No. 86, \$43.75; No. 87, \$44.25; No. 88, \$44.75; No. 89, \$45.25; No. 90, \$45.75; No. 91, \$46.25; No. 92, \$46.75; No. 93, \$47.25; No. 94, \$47.75; No. 95, \$48.25; No. 96, \$48.75; No. 97, \$49.25; No. 98, \$49.75; No. 99, \$50.25; No. 100, \$50.75; No. 101, \$51.25; No. 102, \$51.75; No. 103, \$52.25; No. 104, \$52.75; No. 105, \$53.25; No. 106, \$53.75; No. 107, \$54.25; No. 108, \$54.75; No. 109, \$55.25; No. 110, \$55.75; No. 111, \$56.25; No. 112, \$56.75; No. 113, \$57.25; No. 114, \$57.75; No. 115, \$58.25; No. 116, \$58.75; No. 117, \$59.25; No. 118, \$59.75; No. 119, \$60.25; No. 120, \$60.75; No. 121, \$61.25; No. 122, \$61.75; No. 123, \$62.25; No. 124, \$62.75; No. 125, \$63.25; No. 126, \$63.75; No. 127, \$64.25; No. 128, \$64.75; No. 129, \$65.25; No. 130, \$65.75; No. 131, \$66.25; No. 132, \$66.75; No. 133, \$67.25; No. 134, \$67.75; No. 135, \$68.25; No. 136, \$68.75; No. 137, \$69.25; No. 138, \$69.75; No. 139, \$70.25; No. 140, \$70.75; No. 141, \$71.25; No. 142, \$71.75; No. 143, \$72.25; No. 144, \$72.75; No. 145, \$73.25; No. 146, \$73.75; No. 147, \$74.25; No. 148, \$74.75; No. 149, \$75.25; No. 150, \$75.75; No. 151, \$76.25; No. 152, \$76.75; No. 153, \$77.25; No. 154, \$77.75; No. 155, \$78.25; No. 156, \$78.75; No. 157, \$79.25; No. 158, \$79.75; No. 159, \$80.25; No. 160, \$80.75; No. 161, \$81.25; No. 162, \$81.75; No. 163, \$82.25; No. 164, \$82.75; No. 165, \$83.25; No. 166, \$83.75; No. 167, \$84.25; No. 168, \$84.75; No. 169, \$85.25; No. 170, \$85.75; No. 171, \$86.25; No. 172, \$86.75; No. 173, \$87.25; No. 174, \$87.75; No. 175, \$88.25; No. 176, \$88.75; No. 177, \$89.25; No. 178, \$89.75; No. 179, \$90.25; No. 180, \$90.75; No. 181, \$91.25; No. 182, \$91.75; No. 183, \$92.25; No. 184, \$92.75; No. 185, \$93.25; No. 186, \$93.75; No. 187, \$94.25; No. 188, \$94.75; No. 189, \$95.25; No. 190, \$95.75; No. 191, \$96.25; No. 192, \$96.75; No. 193, \$97.25; No. 194, \$97.75; No. 195, \$98.25; No. 196, \$98.75; No. 197, \$99.25; No. 198, \$99.75; No. 199, \$100.25; No. 200, \$100.75; No. 201, \$101.25; No. 202, \$101.75; No. 203, \$102.25; No. 204, \$102.75; No. 205, \$103.25; No. 206, \$103.75; No. 207, \$104.25; No. 208, \$104.75; No. 209, \$105.25; No. 210, \$105.75; No. 211, \$106.25; No. 212, \$106.75; No. 213, \$107.25; No. 214, \$107.75; No. 215, \$108.25; No. 216, \$108.75; No. 217, \$109.25; No. 218, \$109.75; No. 219, \$110.25; No. 220, \$110.75; 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# Trade Report.

## General Hardware.

During the past week there have been comparatively few changes in prices, and the general conditions remain substantially as at our last review of the market. The demand is satisfactory for the season, and indicates that the stocks throughout the country are unusually light. The fact that within the past week or two there have been fewer advances than previously is referred to as a healthful feature, indicating a conservative disposition on the part of manufacturers, and an unwillingness to make unnecessary advances, which the course of trade might not justify. The general firmness of prices, and the difficulty of obtaining prompt shipment of some goods, are also referred to as showing the tone of the market.

### NAILS.

The New York market is quiet and fairly steady. Buyers are beginning to make inquiries, and it is believed that if the weather continues favorable the spring movement will soon set in, with every indication that far it will be heavy. Concessions are still made by second hands in some exceptional instances by manufacturers' agents. We quote \$2.40 for Iron Nails, in carload lots from dock, and \$2.45 @ \$2.50 from store.

### BARB WIRE.

The New York market is quiet, so far as new orders are concerned, with prices unchanged at 4½ cents for carload lots and 4½ cents for small quantities of Four-Point Galvanized Barb Wire.

The Thorn Wire Hedge Company, of Chicago, have a unique advertisement in this issue, to which we call special attention. They manufacture the Red Star 4 point Steel Barb Wire, the S. & C. 2 point Steel Barb wire, and the Kelly Yielding Barb. The Barb used for the last-named Wire are cut from steel ribbon, made expressly for this company of superior steel, and while they are pointed and will prick they are at the same time non-lacerating, as they are not rigid but will yield and draw out. The company have just issued their thirteenth annual circular, which is a very neat 36-page catalogue, containing information of value to farmers and others. Their advertisement is a reproduction of an advertising circular which they are distributing. It says: "We inclose our present price-list." This is as follows, subject to change without notice:

Red Star, Regular, Painted, per lb..... \$0.08½  
S. & C. 2-point, Painted, per lb..... 0.08½  
S. & C. 2-point, Thickset, per lb..... 0.04  
Above Galvanized, 1 cent higher  
Kelly Yielding Barb, Galvanized, per lb..... 0.04½  
Kelly Yielding Barb, Galvanized, per lb..... 0.03½  
Galvanized Spiral Ribbon, per lb..... 0.04½  
Steel Staples, our make, per keg..... 3.75  
Samson Switches, lots of 1 dozen, per doz..... 6.50  
Samson's per doz..... 13.00

Terms, 60 days, or 2 per cent. discount if paid in ten days. Orders of 500 lbs. or over delivered free on board car in Chicago.

The Washburn & Moen Manufacturing Company have brought suit against Mr. Jacob Haish, of DeKalb, Ill., for infringing the Glidden Barb Wire patent, and on the 21st ult. Judge Blodgett, of Chicago, decided to grant the complainants a preliminary injunction restraining Mr. Haish from manufacturing or selling the Barb Wire claimed to be an infringement, pending the decision of the suit. This injunction does not interfere with Mr. Haish's manufacture of the Barb wire for which he holds a license.

J. W. Gates, President of the Southern Wire Company, of St. Louis, Mo., writes us as follows, under date of February 25: "The Southern Wire Company have been shut down for the past week on account of the breaking down of the engine in our Barb Wire department. They will, however, be running the same as usual tomorrow morning, statements to the contrary notwithstanding, and will be prepared to fill all orders for two or four point Barb Wire, regular or thickset, of their brands at the lowest possible prices. Please state to your readers that all orders to us will go forward promptly. There has been no decision affecting the Southern Wire Company, and there is no suit against them at the present time."

### MISCELLANEOUS PRICES.

A largely attended meeting of the manufacturers of Augers and Bits was held in this city last week. The matter of the irregularity of prices which has of late to some extent characterized the market was considered, and it was decided to withdraw all quotations, and higher figures than those recently prevailing were unanimously adopted. As the result of this meeting the market for this line of goods is regarded as strengthened. The following manufacturers were represented: James Swan, W. A. Ives & Co., C. E. Jennings & Co., Connecticut Valley Mfg. Company, New Haven Copper Company, Humphreysville Mfg. Company, and F. H. Beecher.

Many manufacturers will sympathize with the remark of the president of a leading company, whose goods have recently been advanced, that during the season, owing to the large purchases by the jobbers, their goods will be sold at lower prices than they themselves can sell them. In the present

condition of the market many goods can be bought more advantageously from second parties than from the manufacturers.

The Withington and Cooley Mfg. Company, Jackson, Mich., under date February 25, issue Circular No. 1, withdrawing all quotations both as to Wood and Steel Goods. They allude to the profitless prices at which these goods have been sold, the increased cost of manufacture, and the relation of the demand to their ability to supply as requiring the advances which they will make in future. They quote as follows:

Wood Goods (Snaths and Cradles).....	50	50
Malleable Rakes.....	50	50
Forks.....	60	10, 10½, 15
Warren Hoes and Jackson Lawn Rakes.....	60	10, 10½
All other Steel Goods.....	60	10, 10½

The trade will learn with regret of the existence of considerable irregularity in the prices of Handled Hammers. Since the adoption of the new list the competition among the makers has been active, and the market is not in a satisfactory condition. The new list is to a good extent adhered to, but frequently exceptional prices on certain lines of goods are made, varying widely from regular discounts.

Planes show thus far no signs of improving in price, there having been a slight decline since our last reference to them. It is generally thought that the present extreme competition must be of comparatively short duration, and perhaps the prevalence of the existing low prices will tend soon to a better condition of things. It is generally conceded that there cannot be much money for the manufacturer when second quality Bench Planes are sold by the jobbers at a discount of 60 per cent.

Some of the manufacturers of Stamped, Pieced and Japanned Tinware are selling from the old, rather than from the new and high list, which has been quite generally adopted. The prices on these lines of goods are marked by considerable irregularity, and the market does not give much indication of an improved condition. If the negotiations which are in progress result satisfactorily, it is probable that somewhat higher and more uniform prices will prevail.

Most of the manufacturers of Wire Cloth are sold to about the extent of their production, and the supply of this line is now practically in the hands of the jobbers. Prices remain firm, but without material change.

The manufacturers of Wire Rope, who have formed a combination, held a meeting in this city on the 25th ult.

The following is the revised dealers' list of C. S. Shattuck, Hatfield, Mass., manufacturer of Breech-Loading Shotguns, Revolvers, &c. Descriptions of the goods named are given in his circular:

Side Snap, 12 ga., Steel Barrel.....	\$ 7.00
Side Snap, 12 ga., Twist Barrel.....	7.75
Side Snap, 12 ga., Damascus Barrel.....	9.50
Top Lever, 12 ga., Steel Barrel.....	7.50
Top Lever, 12 ga., Damascus Barrel.....	8.25
Top Lever, 19 ga., Steel Barrel.....	10.00
Hammerless, 12 ga., Steel Barrel.....	8.00
Hammerless, 12 ga., Twist Barrel.....	9.25
Hammerless, 12 ga., Damascus Barrel.....	11.00
American, 12 ga., Steel Barrel.....	9.25
American, 12 ga., Twist Barrel.....	10.00
American, 12 ga., Damascus Barrel.....	10.75
American, 10 ga., Steel Barrel.....	11.00
American, 10 ga., Twist Barrel.....	12.00
American, 10 ga., Damascus Barrel.....	13.00
American, 8 ga., Steel Barrel.....	14.50
American, 8 ga., Twist, 36-inch Barrel.....	21.00
American, 8 ga., Twist, 40-inch Barrel.....	22.00

Livingston & Co., Pittsburgh, are quoting their Door Locks and Latches at discount 70 per cent. from the list given in their price list September 1, 1885.

The Lalance & Grojean Mfg. Company, New York, are making their line of Stamped Brass Kettles in sizes from 7 to 20 inches. Sizes from 7 to 17 inch inclusive may be quoted at 18½ cents per pound, and sizes 18, 19 and 20 inch at 20 cents per pound.

By a recent change in the list of the Indestructible Towel Racks, of which we gave a description in our last issue, an manufacturer by the Perkins & Bradley Mfg. Company, New Haven, Conn., No. 101 is listed \$4.25 for 16 inch and \$5.75 for 18 inch. The following is their revised and complete list, which is subject to the regular discount of 45 per cent:

### Indestructible Coat and Hat Hooks.

No. 10, Coppered.....	Per gross..... \$3.75
No. 20, Japanned.....	4.25
No. 30, Chestnut Bronze.....	4.25
No. 40, C. Tinned.....	6.00
No. 50, Brass Plate.....	12.50
No. 60, Brass Plate.....	12.50
No. 70, Nickel Plate.....	12.00

### Screws packed with Hooks.

No. 110, Coppered.....	Per gross..... \$4.25
No. 120, Japanned.....	5.00
No. 130, Chestnut Bronze.....	5.00
No. 140, C. Tinned.....	6.75
No. 150, Brass Plate.....	14.00
No. 160, Brass Plate.....	14.00
No. 170, Nickel Plate.....	13.50

### Indestructible Towel Rack.

No. 101, Nickel Plate, Walnut Rolls.....	16 in. Per doz. \$4.25	18 in. Per doz. \$5.75
102. Tinned, Walnut Rolls.....	3.25	5.25
103. Japanned, Walnut Rolls.....	3.25	5.25
104. Japanned, Birch Rolls.....	3.00	4.00
105. Coppered, Birch Rolls.....	2.75	3.75

### Stationary.

No. 201., Nickel Plate, Walnut Rolls.....	16 in. Per gross. \$5.00	18 in. \$6.50
202. Tinned, Walnut Rolls.....	4.00	5.25
203. Japanned, Walnut Rolls.....	4.00	5.25
204. Japanned, Birch Rolls.....	3.75	5.00
205. Coppered, Birch Rolls.....	3.00	4.50

### American Garment Hanger.

No. 10, Coppered Finish, 17½ in. long.....	Per gross. \$14.40
101. Tinned Finish, 17½ in. long.....	17.25
102. Brilliant Finish, 17½ in. long.....	21.60
103. Electro-Bronze Finish, 17½ in. long.....	26.00
104. Nickel Finish, 17½ in. long.....	28.00

### WHAT THE TRADE SAY.

We are in receipt from the buyer of a well-known Hardware house of the following communication relating to the existing lack of uniformity in catalogues, price lists, &c., and the inconvenience resulting therefrom, and suggesting a remedy. If manufacturers would adopt the method indicated they would serve materially the convenience of buyers, and, at the same time, probably promote their own interests. The difficulty experienced in the management of price lists is caused very largely by the number of small and irregular shaped ones which are issued, and there can be little doubt that this matter would be much more better presented to the trade if given in a form more suitable and convenient for preservation.

A great deal of trouble comes from manufacturers whose catalogues are of diminutive size, and we take pleasure in emphasizing the suggestions of our correspondent:

A recent paragraph in your journal touched upon a subject which may well receive further attention. The attempt to bring about some degree of uniformity in the size of catalogues and price lists will be commended by thousands. The mass of printed matter which now finds its way to a buyer's hands is appalling, not so much by reason of its bulk as from its heterogeneous, incongruous, unassimilable character—large sheets of thin paper, small sheets of thick paper, leaves, semi-leaves, leaflets, folded pages which have to be turned upside down and inside out, pamphlets of every size and shape which a wild imagination can conceive. Is it any wonder that the unfortunate and bewildered recipient, in despair of ever reducing this mass to serviceable shape, consigns the greater portion to the waste-basket?

Is there a better way? We believe there is. The pamphlet form with paper, muslin or board covers is general, and with the exceptions hereinafter noted should be universal. The merits and convenience of this form are so obvious that we assume that there will be no controversy on this point. But as to the size—that is, the length and breadth, what rule shall determine that? In the effort to discover one, it is a satisfaction to have found that the catalogues of many well-known concerns are so nearly uniform as to serve as a basis. Thus the catalogues of Baker, Field, Vom Cleff, Wiesbusch, Ames, Eberhard, Iron Clad, Union Hardware Company, Union Mfg. Company, A. G. Peck & Co., Millers Falls, Shepard Hardware Company, Stanley Rule and Level Company, Chatillon, Woods, Sherwood and others, varying from 8 to 150 pages, are nearly uniform in their size, which is 9 x 6 inches, while the number of those that vary from this size by only a ¼ or ½ inch, and which might, therefore, in succeeding editions be easily enlarged or reduced in dimensions to conform thereto, is very large. Does not this fact seem to indicate a size which may become standard? We find in a large collection no such indication of preference for any other size. This also may be said in its favor, that it is about the size of commercial note, so that correspondence relating to the contents may be retained therein without folding or clipping. This is not the case with smaller lists, in which the difficulty of accommodating such correspondence, and in some cases even the discount sheet is often considerable, by reason of their diminutive size. Let advertisers of Hardware specialties, which require only a single page or a four-page circular, adopt the same size. These sheets or circulars may then be indexed in a blank book of the same size, or retained within the cover of a catalogue of similar goods, and kept in mind through the medium of association, comparison or competition, when otherwise the chances are they would be consigned to the waste-basket or buried in the huge and unwieldy scrap book. All other things being equal, that man's goods will stand the best chance with the trade which are catalogued in the most convenient and accessible form. We have undertaken to indicate such a form, and venture the hope that in the absence of a better suggestion it may be adopted. Muslin rather than paper covers should be provided for that part of the edition at least which is intended for office use. These suggestions are of course not intended for the few manufacturing concerns of great magnitude, the necessities of whose case in this respect make them a law unto themselves.

The following letter from a Hardware man in Maine relates to the question as to the propriety of paying bills in local checks, and contains a suggestion which if adopted upon by our readers would throw additional light on the subject. Our correspondent says:

I have been reading the discussion carried on in your columns relative to payments of bills by personal checks on local banks, and am strongly of the opinion that "Prosperity's" business with his bank must be exceedingly small if he is charged by his bank for collecting such checks, and, I might add, likely to remain small if he applies his doctrine to his business, as I do not think any respectable merchant would feel disposed to run to his bank for a draft every time he wished to remit for a bill. I had about 15 years' experience in banking business and know we never thought of charging a depositor who kept a respectable deposit account anything for collecting such checks on other banks as he might receive in his business. We allowed no interest on deposit account, hence considered such favors due such customers. Of course, parties keeping no deposit account, or a very small one, were invariably charged a small sum to pay for collecting, &c. I have had a little more than three years' experience in Hardware business, and have always made it a rule to buy for cash. I have always paid by personal checks for bills from Vermont to Michigan, and have yet to receive first the expression of dissatisfaction from any of the houses from whom I buy, and believe I get advantage of bottom figures. If I found out that I was charged more for goods by any house because of any known manner of making payments, I should certainly drop them instanter. On the other hand, many of them have expressed their satisfaction, and the wish that all their customers would pay as promptly and in same manner.

A hardware house in this State sends us the following suggestive letter:

In reading your correspondents letters on private checks, I recall the only time there was any complaint in regard to ours. We had bought 20 cases of Blind Butts from a manufacturer for a very low figure, delivered here. We sent our private check to pay for the same. The receipt came back by return mail, with the remark that it was taking both ends of the bargain, not even to pay freight on the money, after he had paid freight on the goods! We could see the point.

### ITEMS.

The Eberhard Mfg. Company, Cleveland, Ohio, issue in convenient form a copy of the Interstate Commerce bill, with side titles. It is introduced as follows:

Judging from personal experience, we feel that the Interstate Commerce bill, now become a law, is a subject of interest, in one way or another, to every one buying or selling goods. We are pleased, therefore, to present to you, in a form handy for reference, the text of the law as it now stands, together with some able comments by a leading journal. Future legislation will

The following is from a Hardwareman in Idaho, and relates, it will be observed, to charges for cases and cartage, and the propriety of paying bills with local checks:

I noticed with much interest the discussion about home checks, and packing and cartage charges. I fully concur in the opinion of your Michigan correspondent. The charges for P. & C. are in my judgment an imposing system of robbery by jobbers, and ought by all means to be abolished. I have had bills of goods sent me, the invoice amounting to \$400, and not less than \$6.50 added for packing and cartage. On making inquiries as to the correctness of such charges, the reply is that they only cover the actual cost. I for one will be glad to join your Michigan correspondent in the endeavor to secure a fair deal in this matter.

What do you Eastern people think when

I inform you that not less than ½ per cent. of any check will buy exchange on any Eastern or Western bank where I am doing business. In one instance last year I sent a check for \$1500 to a firm in Chicago, and it cost me \$7.50. In fact, our bank and express companies here hold their rates just even with the United States money order charges. Such charges are unreasonable, and yet what can we do? I for one would rather send my check through the post-office than submit to such charges, but it would not look business-like, and only for that reason do I submit to this robbery.

The Motherwell Iron and Steel Company, Logan, Ohio, have issued their catalogue for 1887. It represents the line of Cultivators, Double and Single Shovel Plows, Blades, Shovels, Bull Tongues, Post-Hole Diggers and Mining Tools of which they are manufacturers. Their Favorite Post Hole Digger is represented also on a separate sheet. The company allude to their sales last year as nearly thrice those of the preceding year, and state that the present indications are that this year will show a corresponding increase.

E. S. Hulbert & Co., Bernardston, Mass., have just issued a new and attractive catalogue which represents the line of Nichols Bros.' Butcher and Miscellaneous Knives, of which they are manufacturers. A Ham Slicer has recently been added, and also Streeter's Universal Double Edge Hoe or Scraper, of which they are the sole manufacturers.

In presenting this, their first illustrated catalogue of these goods, they allude to the fact that when they first began making them in a small way in 1880 they were informed by the trade that no American knife could compete with English goods already in the market, but that since that time they have introduced them to the trade in competition with well-known English brands, until the demand became so large that they were compelled to give up the manufacture of steel goods which they had made for nearly 40 years, and devote their whole time and attention to forging these knives.

The catalogue thus presented will be a convenience to their customers, and will doubtless serve to bring the goods to the attention of a larger number of Hardwaremen.

The Aetna Powder Company

## Trade Report.

tation Scale, on which they are behind orders. A new edition of their list, representing their complete line, has recently been issued.

John S. Carter, Syracuse, N. Y., issues a new and attractive catalogue of apparatus and supplies for cheese factories, creameries and dairies, in which are illustrated some of the latest improvements in appliances for making cheese and butter. In the introductory remarks attention is called to the growing importance of this line, and it is estimated that there are invested in this industry about \$600,000,000. The rapid growth and magnitude of this business are alluded to as requiring rapid advancement in improvements in apparatus and appliances.

F. E. Myers & Bro., Ashland, Ohio, issue a sheet showing some of their leading Hay-making Tools for the coming season. Illustrations are given representing some leading articles, with parts, attachments, &c. Their Combination Carrier, with swivel attachment, description of which is given on page 7 of this issue, is illustrated.

The trade will observe the full-page advertisement of the Buffalo Forge Company, page 18, in which they illustrate some of their leading lines. We are advised that they are making several new designs of Power Drills, two new styles Hand Drills, with iron frame, giving them an exceptionally large variety. They have also added several new styles and sizes of Heating Furnaces.

At a recent meeting of the National Window Glass Manufacturers' Association a resolution was adopted obliging every member to have burned or cut into the ends of the boxes the quality marks, in such a way that they cannot be erased without defacing them, and requiring manufacturers to mark their addresses on the outside of the boxes, and also to place inside a slip with the name of the manufacturer and the quality of the Glass.

The Southern White Lead Company and the Mc Birney & Johnston White Lead Company, of Chicago, have been consolidated as the Southern White Lead Company, with offices in St. Louis and Chicago. The executive officers are the same as those heretofore managing the two companies. Both factories will be operated for the manufacture of the brands heretofore made, and orders will be filled from either St. Louis or Chicago, as may be most convenient in time and freight rates.

The trade will observe that in their advertisement on page 8, John H. Graham & Co., 113 Chambers Street, New York, call attention as a seasonable line to the Freezers of the American Machine Company, for whom they are agents.

Wyman & Gordon, Worcester, Mass., have just issued a new catalogue, in which they illustrate their Wood-workers' and Quick Action Vises. They also call attention prominently to their Forging department, which they refer to as being improved by the addition of new tools of the best make, enabling them to do any kind of drop, power, or trip-hammer forging, die rolling, hot or cold punching, &c., and allude to their facilities for making Bicycle or Tricycle parts, Forgings for Fire Arms, Sewing Machines, Agricultural Tools or parts requiring duplicates in quantities. They also refer to their machine shop and die department. The pamphlet contains a list of some shops in which their vises are used, and refers to the variety of round work, such as Handles, Balls, Studs, Spindles, &c., which they are prepared to make.

G. W. Seavey, Fort Wayne, Ind., calls attention to his varied line of Hardware, Agricultural Implements, Stoves, Tinware, &c., in a sheet devoted to the illustration of some leading lines in which are given also some list prices and discounts.

It will be observed that in their advertisement on page 42 the Goodell Company, Antrim, N. H., illustrate Cahoon's Patent Broadcast Seed Sower, a machine to which they have added improvements from time to time. It is alluded to as a hand machine having valuable features, and is described as sowing from 4 to 8 acres per hour at a common walking gait, throwing out wheat about 40 feet wide. It is furnished with a special gate for grass seed.

The catalogue of the Ayres Mfg. Company, Worcester, Mass., illustrates the variety of Standard Wire Goods and specialties which they are manufacturing. The goods recently added are included in a four-page appendix, and include Strainers and some household specialties.

The Wiard Plow Company, Batavia, N. Y., illustrate in their catalogue the varied line of Plows which they are making and also the Automatic Hand Corn Planter. The catalogue is accompanied by a price-list conveniently arranged.

Our readers will observe the notice on page 3, in which Francis J. P. Tommins & Co., 26 Warren street, New York, express their desire to correspond with manufacturers of staple and special lines of Hardware, Agricultural Goods, Machinery, &c., with a view to representing them in this city for export trade.

The Acme Shear Company, Bridgeport, Conn., have issued a new catalogue and price list representing the Cast Shears and Hardware specialties of which they are manufacturers. It is printed in both Spanish and English. They direct special attention to a new Shear, the Crescent, which they have lately put on the market. It is nickel-plated and of new and attractive design. The company state that they exercise great care in the production of these Shears, pack them in half-dozens in strong paper boxes, and offer them at a price to compete with any nickel-plated Shears on the market. In their introductory circular it is stated that the company's output for Shears for the past year has aggregated over 1,000,000 pairs. They have increased their facilities by erecting a new factory, to the extent and completeness of which they refer.

The Lake Huron Stone Company, Detroit, Mich., have issued a new catalogue in which they describe their line of Grindstones and Scythes. It is fully illustrated, and gives full descriptions of the different lines. The company direct special attention to their Patent Adjustable and Detachable Fixtures, as enabling them to ship their Mounted Grindstones knocked down. The different styles in which these goods are made are fully illustrated and described. Information is also given in regard to their quarries and factories and the shipping of the goods. The company report business as very satisfactory and the outlook for the coming year promising.

### Metal Market.

**Copper.**—The market has been very flat, Lake Ingots being freely offered on the spot, as well as March to May delivery, at 10 1/2¢, and it is very difficult to get a bid in any quantity of 10 1/2¢, the general opinion being that we may drift to 10¢ again. Outside brands cannot be quoted any higher than from 9 1/2¢ down to 9 1/2¢. Chili Bars have fluctuated in the London market as follows: February 25, £39. 5/-; February 26, £39. 7/6; February 28, £39. 10/-; March 1, £39. 7/6, and this morning, £39. 7/6. Best Selected remains steady at £44. Messrs. James Lewis & Son, Liverpool, February 16, 1887, write: "The value of Chili Bar Copper has slowly but steadily advanced during the past fortnight from £38. 18/9 1/2 ton for sharp cash warrants to £39. 10/- to day's value. This improvement is mainly due to the greatly improved statistical position of the metal, both present and prospective. Stocks since the beginning of the year show a decrease of 2,149 tons, and the visible supply of 2,517 tons. The imports from the United States have decreased 1,328 tons, and this reduction promises to continue for several months to come. A considerable business in sheets at £37. 10/- 1/2 ton has been done for India the past fortnight, and the export of Manufactured Copper during January was 270 tons over that of 1886, and 2017 tons over that of 1885. The quantity of furnace material in stock available, with the exception of Spanish Precipitate, is now reduced to very small compass.

**Tin.**—There has been an increase in business here, with transactions of about 200 tons, of which about 130 tons is spot and March delivery at 22.45¢, but since then 22.55¢ has been paid for March and 22.62 1/2¢ for April. This improvement has been caused by higher quotations from London since the beginning of the week. Our spot supplies are ample, and the quantity afloat is sufficient to cover two months' consumption besides, so that we need not go to London for fresh supplies for the next two months. The quotation in London this morning is £101. 17/6 for Straits spot and £102. 12/6 for three months. The exports of Tin from the Straits to the United States have been, in piculs, 82,015 in 1886, against 43,089 in 1885, 59,901 in 1884, 114,284 in 1883, 109,025 in 1882 and 82,824 in 1881. **Tin Plates.**—There has been a good demand at rather easier, although not quotably lower, figures. We therefore repeat nominally our last week's quotations. We quote in this market large lines, per box: Siemens-Martin Steel, charcoal finish, \$4.80 @ \$5.25; Coke finish, \$4.55 @ \$4.60; Charcoal Terne, \$4.15 @ \$4.25, and Coke Terne, \$4.25 @ \$4.35. Messrs. Vivian, Younger & Bond, London, write under date February 8: "Tin Plates. The prices of Plates not having responded at all to the important advance in the raw material, there is no difficulty in making sales at existing quotations; but as the contracts for Steel purchased at the lowest price began to run off makers showed less disposition to sell. The market is in a most healthy condition, and everything points to a good trade at improving values as the spring advances."

**Lead.**—Sales during the week have amounted to 400 tons Common Domestic at \$4.45 @ \$4.47 1/2, which is also the closing figure, the market winding up firm, Common Domestic being sparingly offered, while Corrugating Lead is scarce at \$4.50. The London market has declined 2/6 1/2 ton, Soft Spanish being quoted at £12. 12/6, and English Pig at £12. 17/6. The Western markets are firm and unaltered.

**Spelter and Zinc.**—There has been a steady demand for Common Domestic Spelter at 4.50¢ @ 4.75¢, and Silesian at 4.87 1/2¢ nominal. In London the latter remains steady at £14. 5/-. We quote Bertha Refined 8¢. **Sheet Zinc.**—As we are now approach-

ing the demand for refrigerators, Domestic Sheet Zinc is becoming more active, and may now be quoted 5.85¢ @ 5.90¢.

**Antimony.**—The market has been moderately active at 6¢ for Cookson and 7 1/2¢ for Hallett. The latter remains unaltered in London at £30.

### New York Metal Exchange.

The following sales are reported:

15 tons Tin, March.....	22.50¢
50 tons Tin, April.....	22.55¢
SATURDAY, February 26.	
20 tons Tin, March.....	22.45¢
50 tons Tin, April.....	22.57 1/2¢
MONDAY, February 28.	
100 tons Tin, Spot.....	22.45¢
TUESDAY, March 1.	
40 tons Tin, March.....	22.55¢
10 tons Tin, April.....	22.62 1/2¢

### Pittsburgh.

(By Telegraph.)

A meeting of the Western Iron Association was held at its headquarters in Pittsburgh to-day, President B. F. Jones in the chair. There was a very large attendance, about 60 mills being represented either in person or by proxy. After a full discussion it was unanimously decided to make no change in present card rate. No other action was taken.

Office of *The Iron Age*, 77 Fourth avenue, Pittsburgh, Pa., March 1, 1887.

The general business situation has not varied much during the week just closed. In most lines there is not so much activity, which may be attributed in large part to the unsettled and bad weather, as well as the almost impassable condition of the roads. At the Northwest there has been one of the most severe blizzards of the winter, which of course had an unfavorable influence upon business out there, while in this section of the country there has been rain, sleet and snow, making it the worst of the season so far as regards outdoor operations. In many localities horse-power transportation had to be suspended; it was simply out of the question. Then again, owing to high waters in nearly all the rivers from Pittsburgh to New Orleans, a distance of almost 2000 miles, many towns and cities, as well as thousands of farms, have been submerged. The majority of lodges of the Amalgamated Association in the Mahoning Valley have held their meetings, and forwarded to headquarters here such changes as they would like to have made in the wage-scale for the coming year. The general feeling appears to be that the scale should be fixed at \$5.50 for puddling, and it is thought that the price named will be recommended. It is intimated that the stove moulder here will ask for an advance in wages before long; they are now awaiting the sanction of the Molders' Union. There are over 500 molders employed here, and it is estimated that a strike would throw double that number of men out of employment—pattern-makers, laborers, &c. It is possible, however, that the matter will be arranged without a strike. Rumors have been current during the past week that the coke syndicate intended to reduce the price of Coke 25¢ to 50¢ 1/2 ton. It is generally conceded that the syndicate made a mistake in advancing the price when they did, as the iron business was not in condition to stand the same. It is said that some of the Eastern furnaces have abandoned the use of Coke and gone to hard Coal, which is cheaper; otherwise the change would not be made.

**Pig Iron.**—The general position of the market remains much the same as noted in our report of a week ago; there is not so much new business, and the feeling is easier, although for well-known brands prices are steady, with light offerings of the latter. Some operators are bearish in their views, predicting that present prices cannot be maintained, while others equally as well informed, and whose opinions are entitled to full as much consideration, entertain views quite the reverse. The general belief is that the market will rule steady at about present prices. While there is a lull at present, it is not unexpected, in view of so many consumers having anticipated future wants. There will, no doubt, be an increased demand before the close of the present month. But few of the furnaces that supply this market will have Iron to sell for a month or two, some of them even longer, and with no falling off in consumption, and no accumulation of supply, there is no ground apparent for apprehension of a break. The margin for profit to furnacemen is small at present prices, as the advance in price has been offset to a large extent by increased cost of production; Ore, Coke, Limestone, Cinder, &c., have all gone up in price, hence the furnaceman has not the bonanza attributed to him by a good many people who know nothing about the business, excepting what they get in the newspapers. There will no doubt be an increased demand before the close of the present month, and it is expected that it will be still better in April, by which time a good many consumers will have worked up what stock they have and be obliged to replenish. We quote as follows:

Neutral Gray Forge.....	\$30.00 @ \$31.00, 4 mos.
All Ore, Mill.....	21.50 @ 22.00, 4 "
Wrought Iron.....	19.00 @ 20.00, 4 "
No. 1 Foundry.....	22.50 @ 23.00, 4 "
No. 2 Foundry.....	21.00 @ 21.50, 4 "
No. 3 Foundry.....	19.50 @ 20.00, 4 "
Charcoal Foundry.....	22.00 @ 22.50, 4 "
Charcoal Blast Charcoal.....	27.00 @ 30.00, 4 "
Bessemer Iron.....	23.25 @ 23.50, 4 "

Included in the sales reported was a lot of 2000 tons Bessemer at \$22.85, cash. Some furnace men are asking \$23, cash, and refusing to accept anything less. Bessemer Iron is firmer than any other kind, and it looks as if prices would go still higher, as there is an increasing demand and but little offering.

**Muck Bar.**—There are increased offerings and the market is weak, with sellers more anxious to sell and buyers disposed to hold off. There is considerable being offered here from Wheeling and other points west of Pittsburgh. A number of country mills have been started up on Muck Bar. We quote at \$35 @ \$35.50, cash. Some sales were made at \$34.50, cash, but it was not first quality. It is claimed by brokers that the sales reported some weeks ago at \$37 @ \$37.50, cash, were never made, and that the object in reporting them was to boom the market.

**Manufactured Iron.**—There is a continued good degree of activity, and prices are quoted firm upon a basis of 2¢ for Bars, 60 days, 2 1/2% off for cash. Skelp Iron is in good demand, and may be quoted at 2.25¢ @ 2.30¢ for Grooved and 2.60¢ @ 2.62 1/2¢ for Sheared. It is rumored that a meeting of the Western Iron Association will be called shortly to consider the propriety of advancing the card rate, but it is not likely that there will be any immediate advance made, although it is admitted on all sides that the products are too low compared with the rest of the raw material.

**Nails.**—Trade is generally reported quiet, both here and at Wheeling, but an improved demand is looked for before the close of the present month. It appears that nearly all large buyers bought pretty freely prior to the last advance, realizing, as they did, that prices were likely to be advanced, and they are now out of the market; moreover, they usually hold off for a time after an advance to see whether or not the advance is to be maintained. The regular monthly meeting of the Western Association took place in this city last Wednesday, but there was no change made in prices. The card rate for carlots and upward remains unchanged at \$2.60, 60 days, 2 1/2% off for cash, but it is intimated that sales are being made below the card rate. The next monthly meeting takes place at Chicago.

**Wrought-Iron Pipe.**—There is a continued good degree of activity; mills here are pretty fully employed, and the business is encouraging for the spring and summer. As several new mills will be ready to be started up before long, thereby increasing capacity, there are apprehensions that the business will be overdone. There is not much doubt but there will be a demand for all the pipe that can be made this year, but

### Coal Market.

There is a much more settled feeling in the Coal trade, but new orders are by no means pressing in prospect of milder weather and with the impediment of high rates of freight. Manufacturers' sizes, such as Nut and Pea, are very scarce and high, some dealers reporting that there is no Pea on the market.

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The Bituminous trade is still awaiting a formal announcement of prices, rates of toll, &c., another meeting held at Baltimore during the past week having proved indecisive. Prices are firm at \$3.25 and Coal is in demand. Vessels are getting \$1.75 @ \$2.75 ton from Baltimore to Boston, but these rates are dropping under more active competition. Bituminous Coal, at Philadelphia, for outside delivery, is \$2.50.

The total amount of Anthracite Coal sent to market for the week was 704,067 tons, compared with 604,513 tons in the corresponding week last year. The total amount of Anthracite mined thus far in the year is 4,151,935 tons, compared with 4,165,915 tons for the same period last year.

The shipments from the Cumberland coal region for the week were 61,945 tons, and for the year to date 360,774 tons—an increase of 101,413 tons as compared with the corresponding period of last year.

### Randall's Copper-Tipped Hammer.

We show in the annexed cut what is known as Randall's copper-tipped hammer, for which Montgomery & Co., 105 Fulton street, New York, are the sole agents. The hammer head is made of malleable iron, the ends provided with a socket into which the copper-tips are fitted and held in position by a set screw. In case one corner of the tip becomes battered more than the other, it may be rotated by loosening the set-screw until the whole tip has been battered; then

## WHOLESALE METAL PRICES, MARCH 2, 1887.

## METALS.

**IRON.**—DUTY: Bars, 8-10¢ to 11-10¢  $\frac{1}{2}$  lb. It is provided that no Bars shall pay a lesser rate of duty than 8¢ per Sheet, 11-12¢ to 11-10¢  $\frac{1}{2}$  lb. Band, Hoop and Scroll, 14 to 14-10¢  $\frac{1}{2}$  lb. Railroad Bars weighing more than 25 lb.  $\frac{1}{2}$  lb. yard, 7-10¢ of 1¢  $\frac{1}{2}$  lb.

## Standard American Pig Iron.

Foundry No. 1 X. . . . .  $\frac{1}{2}$  ton \$21.50 @ 22.00  
Foundry No. 2 X. . . . .  $\frac{1}{2}$  ton \$20.00 @ 21.00  
Gray Forge. . . . .  $\frac{1}{2}$  ton 18.50 @ 19.00

## No. 1 Scotch Pig Iron.

Carnbroe. . . . .  $\frac{1}{2}$  ton \$21.75 @ 22.00  
Coltness. . . . .  $\frac{1}{2}$  ton 22.75 @ 23.00  
Shotts. . . . .  $\frac{1}{2}$  ton 22.50 @ 23.00  
Glenarnock. . . . .  $\frac{1}{2}$  ton 22.50 @ 22.50  
Langloan. . . . .  $\frac{1}{2}$  ton 22.75 @ 23.00  
Summerlee. . . . .  $\frac{1}{2}$  ton 21.00 @ 22.50  
Dalmellington. . . . .  $\frac{1}{2}$  ton 21.00 @ 21.25  
Eglinton. . . . .  $\frac{1}{2}$  ton 21.00 @ 21.50  
Clyde. . . . .  $\frac{1}{2}$  ton 21.00 @ 21.50

## Hails.

Steel, at Eastern mills. . . . .  $\frac{1}{2}$  ton \$39.00 @ 36.50  
Old Raila, Ta. . . . .  $\frac{1}{2}$  ton \$37.75 @ 34.00

## Scrap.

Wrought,  $\frac{1}{2}$  ton, from yard. . . . . \$24.75 @ 25.00

## Bar Iron from Store.

Common Iron: 3 to 2 in. round and square. . . . .  $\frac{1}{2}$  lb. 2.20 @ 2.30  
1 to 6 in.  $\frac{1}{2}$  in. to 1 in. . . . .  $\frac{1}{2}$  lb. 2.40 @ 2.60  
Refined Iron: 3 to 2 in. round and square. . . . .  $\frac{1}{2}$  lb. 2.40 @ 2.60  
1 to 6 in.  $\frac{1}{2}$  in. to 1 in. . . . .  $\frac{1}{2}$  lb. 2.60 @ 2.80  
Rods—4 in. and 11-16 round and sq. . . . .  $\frac{1}{2}$  lb. 2.50 @ 2.70  
Bands—1 to 16 in. to No. 12. . . . .  $\frac{1}{2}$  lb. 2.00 @ 2.70  
" Burden's Best" Iron, base price  $\frac{1}{2}$  lb. 3.50 @ 3.75  
Burden's "H. B. & S." Iron, base price. . . . .  $\frac{1}{2}$  lb. 3.00 @ 3.25  
Norway Rods. . . . .  $\frac{1}{2}$  lb. 6.64

## Sheet Iron from Store.

Common. . . . .  $\frac{1}{2}$  lb. 0.85 @ 0.85  
Nos. 10 to 15. . . . .  $\frac{1}{2}$  lb. 1.25 @ 1.25  
17 to 20. . . . .  $\frac{1}{2}$  lb. 2.8 @ 2.80  
21 to 24. . . . .  $\frac{1}{2}$  lb. 3.0 @ 3.00  
25 and 30. . . . .  $\frac{1}{2}$  lb. 3.25 @ 3.25  
27. . . . .  $\frac{1}{2}$  lb. 3.35 @ 3.40  
30. . . . .  $\frac{1}{2}$  lb. 3.50 @ 3.50

Galvanized 16 to 20. . . . .  $\frac{1}{2}$  lb. 4.80 @ 4.80  
Galvanized 1 to 24. . . . .  $\frac{1}{2}$  lb. 5.30 @ 5.30  
Galvanized. 25 to 26. . . . .  $\frac{1}{2}$  lb. 5.00 @ 5.10  
Galvanized. 27. . . . .  $\frac{1}{2}$  lb. 5.30 @ 5.30  
Galvanized. 28. . . . .  $\frac{1}{2}$  lb. 5.50 @ 5.50  
American Russia. . . . .  $\frac{1}{2}$  lb. 10 @ 10  
Russia. . . . .  $\frac{1}{2}$  lb. 9.50 @ 10 @ 9

American Coil Rolled B. B. . . . .  $\frac{1}{2}$  lb. 5 @ 5 @ 7 @ 7

Iron Wire.—(See Wire.)

**STEEL.**—DUTY: Ingots, Bars, Sheets, &c., valued at 10¢  $\frac{1}{2}$  lb. or less; 6-8 lb. cal. : valued above 4¢ and not above 7¢  $\frac{1}{2}$  lb. 28¢  $\frac{1}{2}$  lb. : valued above 7¢ and not above 10¢  $\frac{1}{2}$  lb. 32¢  $\frac{1}{2}$  lb. : valued above 10¢ and not above 12¢  $\frac{1}{2}$  lb. 36¢  $\frac{1}{2}$  lb. : valued above 12¢ and not above 15¢  $\frac{1}{2}$  lb. 40¢  $\frac{1}{2}$  lb. : valued above 15¢ and not above 18¢  $\frac{1}{2}$  lb. 44¢  $\frac{1}{2}$  lb. : valued above 18¢ and not above 21¢  $\frac{1}{2}$  lb. 48¢  $\frac{1}{2}$  lb. : valued above 21¢ and not above 24¢  $\frac{1}{2}$  lb. 52¢  $\frac{1}{2}$  lb. : valued above 24¢ and not above 27¢  $\frac{1}{2}$  lb. 56¢  $\frac{1}{2}$  lb. : valued above 27¢ and not above 30¢  $\frac{1}{2}$  lb. 60¢  $\frac{1}{2}$  lb. : valued above 30¢ and not above 33¢  $\frac{1}{2}$  lb. 64¢  $\frac{1}{2}$  lb. : valued above 33¢ and not above 36¢  $\frac{1}{2}$  lb. 68¢  $\frac{1}{2}$  lb. : valued above 36¢ and not above 39¢  $\frac{1}{2}$  lb. 72¢  $\frac{1}{2}$  lb. : valued above 39¢ and not above 42¢  $\frac{1}{2}$  lb. 76¢  $\frac{1}{2}$  lb. : valued above 42¢ and not above 45¢  $\frac{1}{2}$  lb. 80¢  $\frac{1}{2}$  lb. : valued above 45¢ and not above 48¢  $\frac{1}{2}$  lb. 84¢  $\frac{1}{2}$  lb. : valued above 48¢ and not above 51¢  $\frac{1}{2}$  lb. 88¢  $\frac{1}{2}$  lb. : valued above 51¢ and not above 54¢  $\frac{1}{2}$  lb. 92¢  $\frac{1}{2}$  lb. : valued above 54¢ and not above 57¢  $\frac{1}{2}$  lb. 96¢  $\frac{1}{2}$  lb. : valued above 57¢ and not above 60¢  $\frac{1}{2}$  lb. 100¢  $\frac{1}{2}$  lb. : valued above 60¢ and not above 63¢  $\frac{1}{2}$  lb. 104¢  $\frac{1}{2}$  lb. : valued above 63¢ and not above 66¢  $\frac{1}{2}$  lb. 108¢  $\frac{1}{2}$  lb. : valued above 66¢ and not above 69¢  $\frac{1}{2}$  lb. 112¢  $\frac{1}{2}$  lb. : valued above 69¢ and not above 72¢  $\frac{1}{2}$  lb. 116¢  $\frac{1}{2}$  lb. : valued above 72¢ and not above 75¢  $\frac{1}{2}$  lb. 120¢  $\frac{1}{2}$  lb. : valued above 75¢ and not above 78¢  $\frac{1}{2}$  lb. 124¢  $\frac{1}{2}$  lb. : valued above 78¢ and not above 81¢  $\frac{1}{2}$  lb. 128¢  $\frac{1}{2}$  lb. : valued above 81¢ and not above 84¢  $\frac{1}{2}$  lb. 132¢  $\frac{1}{2}$  lb. : valued above 84¢ and not above 87¢  $\frac{1}{2}$  lb. 136¢  $\frac{1}{2}$  lb. : valued above 87¢ and not above 90¢  $\frac{1}{2}$  lb. 140¢  $\frac{1}{2}$  lb. : valued above 90¢ and not above 93¢  $\frac{1}{2}$  lb. 144¢  $\frac{1}{2}$  lb. : valued above 93¢ and not above 96¢  $\frac{1}{2}$  lb. 148¢  $\frac{1}{2}$  lb. : valued above 96¢ and not above 100¢  $\frac{1}{2}$  lb. 152¢  $\frac{1}{2}$  lb. : valued above 100¢ and not above 103¢  $\frac{1}{2}$  lb. 156¢  $\frac{1}{2}$  lb. : valued above 103¢ and not above 106¢  $\frac{1}{2}$  lb. 160¢  $\frac{1}{2}$  lb. : valued above 106¢ and not above 109¢  $\frac{1}{2}$  lb. 164¢  $\frac{1}{2}$  lb. : valued above 109¢ and not above 112¢  $\frac{1}{2}$  lb. 168¢  $\frac{1}{2}$  lb. : valued above 112¢ and not above 115¢  $\frac{1}{2}$  lb. 172¢  $\frac{1}{2}$  lb. : valued above 115¢ and not above 118¢  $\frac{1}{2}$  lb. 176¢  $\frac{1}{2}$  lb. : valued above 118¢ and not above 121¢  $\frac{1}{2}$  lb. 180¢  $\frac{1}{2}$  lb. : valued above 121¢ and not above 124¢  $\frac{1}{2}$  lb. 184¢  $\frac{1}{2}$  lb. : valued above 124¢ and not above 127¢  $\frac{1}{2}$  lb. 188¢  $\frac{1}{2}$  lb. : valued above 127¢ and not above 130¢  $\frac{1}{2}$  lb. 192¢  $\frac{1}{2}$  lb. : valued above 130¢ and not above 133¢  $\frac{1}{2}$  lb. 196¢  $\frac{1}{2}$  lb. : valued above 133¢ and not above 136¢  $\frac{1}{2}$  lb. 200¢  $\frac{1}{2}$  lb. : valued above 136¢ and not above 139¢  $\frac{1}{2}$  lb. 204¢  $\frac{1}{2}$  lb. : valued above 139¢ and not above 142¢  $\frac{1}{2}$  lb. 208¢  $\frac{1}{2}$  lb. : valued above 142¢ and not above 145¢  $\frac{1}{2}$  lb. 212¢  $\frac{1}{2}$  lb. : valued above 145¢ and not above 148¢  $\frac{1}{2}$  lb. 216¢  $\frac{1}{2}$  lb. : valued above 148¢ and not above 151¢  $\frac{1}{2}$  lb. 220¢  $\frac{1}{2}$  lb. : valued above 151¢ and not above 154¢  $\frac{1}{2}$  lb. 224¢  $\frac{1}{2}$  lb. : valued above 154¢ and not above 157¢  $\frac{1}{2}$  lb. 228¢  $\frac{1}{2}$  lb. : valued above 157¢ and not above 160¢  $\frac{1}{2}$  lb. 232¢  $\frac{1}{2}$  lb. : valued above 160¢ and not above 163¢  $\frac{1}{2}$  lb. 236¢  $\frac{1}{2}$  lb. : valued above 163¢ and not above 166¢  $\frac{1}{2}$  lb. 240¢  $\frac{1}{2}$  lb. : valued above 166¢ and not above 169¢  $\frac{1}{2}$  lb. 244¢  $\frac{1}{2}$  lb. : valued above 169¢ and not above 172¢  $\frac{1}{2}$  lb. 248¢  $\frac{1}{2}$  lb. : valued above 172¢ and not above 175¢  $\frac{1}{2}$  lb. 252¢  $\frac{1}{2}$  lb. : valued above 175¢ and not above 178¢  $\frac{1}{2}$  lb. 256¢  $\frac{1}{2}$  lb. : valued above 178¢ and not above 181¢  $\frac{1}{2}$  lb. 260¢  $\frac{1}{2}$  lb. : valued above 181¢ and not above 184¢  $\frac{1}{2}$  lb. 264¢  $\frac{1}{2}$  lb. : valued above 184¢ and not above 187¢  $\frac{1}{2}$  lb. 268¢  $\frac{1}{2}$  lb. : valued above 187¢ and not above 190¢  $\frac{1}{2}$  lb. 272¢  $\frac{1}{2}$  lb. : valued above 190¢ and not above 193¢  $\frac{1}{2}$  lb. 276¢  $\frac{1}{2}$  lb. : valued above 193¢ and not above 196¢  $\frac{1}{2}$  lb. 280¢  $\frac{1}{2}$  lb. : valued above 196¢ and not above 199¢  $\frac{1}{2}$  lb. 284¢  $\frac{1}{2}$  lb. : valued above 199¢ and not above 202¢  $\frac{1}{2}$  lb. 288¢  $\frac{1}{2}$  lb. : valued above 202¢ and not above 205¢  $\frac{1}{2}$  lb. 292¢  $\frac{1}{2}$  lb. : valued above 205¢ and not above 208¢  $\frac{1}{2}$  lb. 296¢  $\frac{1}{2}$  lb. : valued above 208¢ and not above 211¢  $\frac{1}{2}$  lb. 300¢  $\frac{1}{2}$  lb. : valued above 211¢ and not above 214¢  $\frac{1}{2}$  lb. 304¢  $\frac{1}{2}$  lb. : valued above 214¢ and not above 217¢  $\frac{1}{2}$  lb. 308¢  $\frac{1}{2}$  lb. : valued above 217¢ and not above 220¢  $\frac{1}{2}$  lb. 312¢  $\frac{1}{2}$  lb. : valued above 220¢ and not above 223¢  $\frac{1}{2}$  lb. 316¢  $\frac{1}{2}$  lb. : valued above 223¢ and not above 226¢  $\frac{1}{2}$  lb. 320¢  $\frac{1}{2}$  lb. : valued above 226¢ and not above 229¢  $\frac{1}{2}$  lb. 324¢  $\frac{1}{2}$  lb. : valued above 229¢ and not above 232¢  $\frac{1}{2}$  lb. 328¢  $\frac{1}{2}$  lb. : valued above 232¢ and not above 235¢  $\frac{1}{2}$  lb. 332¢  $\frac{1}{2}$  lb. : valued above 235¢ and not above 238¢  $\frac{1}{2}$  lb. 336¢  $\frac{1}{2}$  lb. : valued above 238¢ and not above 241¢  $\frac{1}{2}$  lb. 340¢  $\frac{1}{2}$  lb. : valued above 241¢ and not above 244¢  $\frac{1}{2}$  lb. 344¢  $\frac{1}{2}$  lb. : valued above 244¢ and not above 247¢  $\frac{1}{2}$  lb. 348¢  $\frac{1}{2}$  lb. : valued above 247¢ and not above 250¢  $\frac{1}{2}$  lb. 352¢  $\frac{1}{2}$  lb. : valued above 250¢ and not above 253¢  $\frac{1}{2}$  lb. 356¢  $\frac{1}{2}$  lb. : valued above 253¢ and not above 256¢  $\frac{1}{2}$  lb. 360¢  $\frac{1}{2}$  lb. : valued above 256¢ and not above 259¢  $\frac{1}{2}$  lb. 364¢  $\frac{1}{2}$  lb. : valued above 259¢ and not above 262¢  $\frac{1}{2}$  lb. 368¢  $\frac{1}{2}$  lb. : valued above 262¢ and not above 265¢  $\frac{1}{2}$  lb. 372¢  $\frac{1}{2}$  lb. : valued above 265¢ and not above 268¢  $\frac{1}{2}$  lb. 376¢  $\frac{1}{2}$  lb. : valued above 268¢ and not above 271¢  $\frac{1}{2}$  lb. 380¢  $\frac{1}{2}$  lb. : valued above 271¢ and not above 274¢  $\frac{1}{2}$  lb. 384¢  $\frac{1}{2}$  lb. : valued above 274¢ and not above 277¢  $\frac{1}{2}$  lb. 388¢  $\frac{1}{2}$  lb. : valued above 277¢ and not above 280¢  $\frac{1}{2}$  lb. 392¢  $\frac{1}{2}$  lb. : valued above 280¢ and not above 283¢  $\frac{1}{2}$  lb. 396¢  $\frac{1}{2}$  lb. : valued above 283¢ and not above 286¢  $\frac{1}{2}$  lb. 400¢  $\frac{1}{2}$  lb. : valued above 286¢ and not above 289¢  $\frac{1}{2}$  lb. 404¢  $\frac{1}{2}$  lb. : valued above 289¢ and not above 292¢  $\frac{1}{2}$  lb. 408¢  $\frac{1}{2}$  lb. : valued above 292¢ and not above 295¢  $\frac{1}{2}$  lb. 412¢  $\frac{1}{2}$  lb. : valued above 295¢ and not above 298¢  $\frac{1}{2}$  lb. 416¢  $\frac{1}{2}$  lb. : valued above 298¢ and not above 301¢  $\frac{1}{2}$  lb. 420¢  $\frac{1}{2}$  lb. : valued above 301¢ and not above 304¢  $\frac{1}{2}$  lb. 424¢  $\frac{1}{2}$  lb. : valued above 304¢ and not above 307¢  $\frac{1}{2}$  lb. 428¢  $\frac{1}{2}$  lb. : valued above 307¢ and not above 310¢  $\frac{1}{2}$  lb. 432¢  $\frac{1}{2}$  lb. : valued above 310¢ and not above 313¢  $\frac{1}{2}$  lb. 436¢  $\frac{1}{2}$  lb. : valued above 313¢ and not above 316¢  $\frac{1}{2}$  lb. 440¢  $\frac{1}{2}$  lb. : valued above 316¢ and not above 319¢  $\frac{1}{2}$  lb. 444¢  $\frac{1}{2}$  lb. : valued above 319¢ and not above 322¢  $\frac{1}{2}$  lb. 448¢  $\frac{1}{2}$  lb. : valued above 322¢ and not above 325¢  $\frac{1}{2}$  lb. 452¢  $\frac{1}{2}$  lb. : valued above 325¢ and not above 328¢  $\frac{1}{2}$  lb. 456¢  $\frac{1}{2}$  lb. : valued above 328¢ and not above 331¢  $\frac{1}{2}$  lb. 460¢  $\frac{1}{2}$  lb. : valued above 331¢ and not above 334¢  $\frac{1}{2}$  lb. 464¢  $\frac{1}{2}$  lb. : valued above 334¢ and not above 337¢  $\frac{1}{2}$  lb. 468¢  $\frac{1}{2}$  lb. : valued above 337¢ and not above 340¢  $\frac{1}{2}$  lb. 472¢  $\frac{1}{2}$  lb. : valued above 340¢ and not above 343¢  $\frac{1}{2}$  lb. 476¢  $\frac{1}{2}$  lb. : valued above 343¢ and not above 346¢  $\frac{1}{2}$  lb. 480¢  $\frac{1}{2}$  lb. : valued above 346¢ and not above 3

## MANUFACTURING.

## Iron and Steel.

Furnace B, of Carnegie Bros. & Co., at Braddock, which has been out blast since December last for the purpose of relining and repairing, was blown in on the 26th ult., making six furnaces in blast, five of which are running on Bessemer pig and one on spiegel. Furnace C, of the above company, which is at present out of blast for repairs, will blow in about the 10th of the present month.

The laborers employed at the steel works of Singer, Nimick & Co., Limited, at Pittsburgh, have been granted an advance of 10 per cent.

The Billings & Spencer Company, of Hartford, Conn., are now making some 6000 pure copper drop forgings per week. They are commutator bars for electric motors, and are made in 11 sizes, coming from the drop ready for use, save a slight truing up which is required.

The Columbia Iron and Steel Company, of Pittsburgh, have almost completed their new manufacturing plant for Bessemer steel combined with rolling mills at Uniontown, Pa.

The firm of Boyle & Bissell, dealers in iron, steel nails and general supplies, Bissell Block, Pittsburgh, was dissolved January 27, by mutual consent, Mr. Bissell retiring. Mr. Boyle has opened an office in room 6, same block, until April 1, where he will be pleased to see his friends and former customers.

The Falcon Iron and Nail Company, of Niles, Ohio, have bought 12 new self-feeding nail machines, making its total 112 machines.

Myron C. Wick, president of the firm of Cartwright, McCurdy & Co., of Youngstown, Ohio, has recently purchased the plant of Arms, Bell & Co., located in Youngstown, and reorganized the same under the name of the Arms-Bell Company, with the following officers: President, Myron C. Wick; vice president and treasurer, W. H. Baldwin; secretary, J. A. Finch. The new firm will continue the business in all its branches.

The machinery for the new sheet mill of the Cataqua Mfg. Company, to be erected on the Packer Flats, above the Ferndale Mill, has commenced to arrive from Baltimore, where the company purchased a very valuable plant. Some forty carloads are on the way, and will be stored until the erection of the mill is completed.—*Catasauqua, Pa.* Dispatch.

Messrs. Wm. Rogers and Farrelly Alden, of Pittsburgh, have closed negotiations for five acres of land near Freeport, Pa., on which to erect a large works for the manufacture of Russia sheet iron.

Several of the furnaces in the Shenango Valley, Pa., were chilled in consequence of the stoppage during the strike, and considerable trouble has been experienced in getting them to go in working order again.

Mr. M. V. Smith, metallurgical engineer, of Pittsburgh, has the contract for a large ingot heating furnace for the Lickdale Iron Company, at Lebanon, Pa.

The Phoenix Bridge Company, of Phoenixville, Pa., have made a contract for a steel bridge to be built across the Ohio River, between Cincinnati and Covington. It will weigh about 1,500,000 pounds, and will have spans 500 feet long, "the longest in the world." The contract price is about \$1,000,000, and the work will be commenced immediately.

But three firms in Pittsburgh are at present engaged in the manufacture of nails. These are: Shoenberger & Co., Jones & Laughlin, and Chesa, Cook & Co. These firms are at present running at 225 machines, the product of which is estimated at 1400 kgs per day. Steel nails are made exclusively.

The Clymer Iron Company, of Temple, Bucks County, Pa., inform us that they have blown out their Oley Furnace permanently, and that they have also blown out their Mt. Laurel Furnace for the purpose of relining and making other necessary repairs. As soon as these are completed, which will be in about four weeks, the furnace will be blown in again.

The contract for erecting the main building of the recently organized Sharon Steel Casting Company, of Sharon, Pa., has been let to Wallis & Carley, of that place. The dimensions of the building are to be 120 x 150 feet.

Oliver Bros. & Phillips, of Pittsburgh, who have leased the Rosena Furnace at New-castle, Pa., are making a number of extensive repairs and improvements to the furnace, which, when completed, will greatly increase its capacity. As soon as these repairs have been completed the furnace will be put in blast. Its output will be consumed by the lessees.

It is reported that the Phoenix Iron Company, of Phoenixville, Pa., are preparing to build a large steel works, and has ordered 1,000,000 bricks to build the furnaces.

Park Bro. & Co. Limited, of the Black Diamond Steel Works, Pittsburgh, have put in operation eight new puddling furnaces, which they have recently added to their works.

Thos. G. Boyle, the Pittsburgh representative of Gordon, Strobel and Laureau, Limited, of Philadelphia, informs us that he has just closed for his firm what is said to be the largest single blast-furnace contract that was ever let in America, besides a number of smaller ones. The large plant is to be built at Sheffield, Ala., which is on the Tennessee River below the Muscle Shoals, the company being the Sheffield Coal and Iron Company, of which Col. A. S. Colyer is president; Gen. Willard Warner, vice-president, and Major Edward Doud, general manager. This plant will consist of three blast furnaces, 18 x 75 feet, with nine Gordon-Whitwell Copper fire-brick hot-blast stoves, 20 x 65 feet, with six 84 x 48 x 36 feet blowing engines, also including all the buildings,

foundations, and in fact everything to make one of the most complete and modern plants in America. The ground has already been broken, and the contractors expect to have the entire plant in operation within 18 months. A contract was also closed with the Nashville Charcoal Iron and Steel Company, of which Gen. Willard Warner, of Tecumseh, Ala., is president, for two Charcoal furnaces to be erected within four miles of Nashville. These furnaces will be 12 x 60, supplied with four Gordon-Whitwell Copper fire-brick hot-blast stoves, 16 x 65 feet, with four 84 x 48 x 36 feet blowing engines, and all buildings, pumps, &c., to make the plant complete. A contract was also closed with the Decatur Land Improvement and Furnace Company, of Decatur, Ala., of which Col. C. E. Gordon is president and Judge H. G. Bond, General manager, for one coke furnace to be erected at Decatur, which will be 17 x 75 feet, supplied with three Gordon-Whitwell-Copper fire-brick hot-blast stoves, and all buildings, engines, boilers, &c., complete. The above firm also closed a contract with the Coleburg Coal and Coke Company, of Birmingham, Ala., for one 17 x 75 foot furnace with three Gordon-Whitwell-Copper fire-brick hot-blast stoves, and all machinery, buildings, &c., complete. All of this work will be commenced at once, and all be completed within 18 months. Mr. Boyle is at present in Nashville, Tenn., making arrangements for their firm for opening a branch office at that place, which has been found necessary owing to the large amount of business which his firm have on hand there. The above firm have closed contracts for 61 Gordon hot-blast stoves since their introduction a little more than a year ago. The remarkable records which they have obtained at Steubenville, Chicago, Joliet, St. Louis and Birmingham with these stoves on low fuel economy and high product still continues, with greater improved reports from St. Louis and Alabama each week. The latest report from St. Louis is that they are making iron on less than 1900 pounds of coke, and iron of a very superior quality, an increased production over anything they have ever done in the past. Their extensive shops in Philadelphia have just been completed, and will now be run double turn in order to rush out this work.

The furnace of the Kirkland Iron Company, Kirkland, N. Y., was lighted on the 21st ult. Considerable improvements and extensive repairs have been made. The furnace has a capacity of 70 tons a day. Hon. E. B. Buckley, of Antwerp, and C. L. Williams, of Utica, have joined the Board of Directors.

## Machinery.

Davies & Thomas, machine builders of Cataqua, Pa., have received an order for two of their largest upright engines, to be shipped in three months' time, to Braddock, Pa. Their machine department is very busy.

The Cleveland Ship Building Company, of Cleveland, Ohio, write us, in a recent letter, that in addition to the business formerly conducted by the Cuyahoga Works, which they purchased a short time ago, they will engage in the construction of iron and steel ships and machinery for them. At present they are busily engaged in settling them in their new quarters.

The machine shop of the Calumet & Hecla Copper Mine, Michigan, performed quite a feat a short time ago in rebuilding a locomotive in 50 hours. The locomotive had been almost destroyed by a fire which burned some of the buildings at the mine, practically nothing of it being left but the boiler and trucks. The company's machine shop, however, is not a small affair, as it contains 20 lathes, 6 drilling machines, 2 shapers, 4 boring mills, 2 milling machines, 2 pipe-cutting machines and 4 planers, and it employs a force of 90 hands, including 56 regular machinists.

The Manchester Locomotive Works, of Manchester, N. H., have received an order from the Atchison, Topeka and Santa Fe Railroad for 30 new locomotives.

Messrs. Lodge, Davis & Co., builders of lathes, drills, &c., Cincinnati, Ohio, state that they are extremely busy in all their various departments, being considerably behind their orders for the new 21-in. swing engine lathe recently put upon the market by them.

The Eagle Machine Works, at St. Louis, including building, engine, boiler and machinery, patterns, &c., have been purchased by Messrs. C. J. Devlin, H. S. Albrecht and W. Grundy, who have associated for the purpose of carrying on the business for which the works have heretofore been devoted.

Messrs. Hughes Bros., pump manufacturers, of Cleveland, have just completed and shipped a large duplex pump to Mexico, to be used in a silver mine. The steam cylinder is 18 x 12 in. stroke, and the water cylinder is 5 x 12 in. stroke.

The Chicago and Eastern Illinois Railroad Company have just given an order to the Hinkley Locomotive Works, of Boston, for nine new heavy locomotives, made necessary by increasing business. The Hinkley works are also building 15 new locomotives for the Atchison, Topeka and Santa Fe.

Mr. Joseph W. Morgan, formerly of the Hare & Morgan Company, Wilmington, Del., has assumed the management of the Warner & Hough Machine Company, of South St. Paul, Minn., recently established with a capital of \$50,000. Mr. Morgan has had an experience of 21 years in manufacturing nuts, bolts, bridge and architectural iron work and heavy forging. He is the inventor of the Morgan nut lock for railroad work, and he had entire charge of the manufacturing of the Hare & Morgan Company. He built Memorial Hall at the Centennial Exposition, and the iron work of the South street bridge across the Schuylkill River, Philadelphia.

The H. W. Johns Mfg. Company, of New York City, have added a new article to their list of specialties, which they call Vulcabeast. This is a combination of asbestos and rubber, and is made in any required form or shape vulcanized to about 800°, and is a very hard, springy substance, adapted for

valves, packing, and many other things that will suggest themselves to the mechanical mind.

The Frick Company, Waynesboro, Pa., have recently received orders for seven ice-refrigerating machines. The weight of the largest will be 100 tons. The company have orders also for several stationary engines ranging from 100 to 125 horse-power. Between 300 and 400 men are employed, working 14 hours a day.

Tarrant & Ramsay, of Chicago, Ill., have been very busy for the past two months in their foundry, as in addition to their usual line of customers they have been making heavy castings for Messrs. Fraser and Chalmers. They have also secured some of the work that Messrs. E. P. Allis & Co., of Milwaukee, Wis., have been obliged to have done outside since their foundry was burned, and among them are two 35-ton fly-wheels, 20 band-saw columns, a 40 x 54 engine cylinder, as well as several other large pieces.

Messrs. Greenlee Bros. & Co., Chicago, Ill., manufacturers of special wood working machinery, are very much rushed with work. They have received a large number of orders from railway companies and car works for their original specialties, self-feeding saw tables and hollow chisel mortising machines. The United States Rolling Stock Company, Lafayette Car Works, and Terra Haute Car and Manufacturing Company, have lately been furnished with their large car mortisers. This machine will mortise a square hole up to 3 inches in diameter, or even larger, in one operation, leaving the hole entirely free from chips, and works equally well in hard or soft wood. They have just added a number of heavy machines to their plant so as to keep up with the large demand for their specialties.

The Wainwright Mfg. Company, Boston, Mass., report shipments during the month of February of their feed water heaters to the following places: Three in Boston, 1 to Chelsea, 1 to Lawrence, 1 to Ayer, 1 to Forge Village, Mass.; 1 to Keene, N. H.; 1 to Wilmington, Del.; 1 to Newark, 1 to Gloucester, 1 to Millville, 1 to Paterson, N. J.; 2 to Washington, D. C., and 1 to Palatka, Fla. Their corrugated tube radiators having been sent in such opposite directions as Maine and Oregon.

E. L. Post & Co., 10 Peck Slip, N. Y., makers of Post's "Z-ro" metal for journal bearings, have issued a small circular giving letters from the Webster, Camp & Lane Machine Company, the Westinghouse Machine Company and the Morgan Iron Works, all testifying to the anti-friction qualities of the metal. Three tables of test figures are presented giving comparative results of a number of different anti-friction metals now on the market.

An official test was made last week on the machinery in the new Chicago, Milwaukee and St. Paul Railroad Company's freight house, situated at the east end of the Kinzie street bridge. The building is a large two-story and basement structure, built of white brick, and has by far the greatest storage capacity of any freight house in the West. It is also the only three story building of its kind in the United States. To utilize the three doors the company have placed six elevators near the west side of the building. Three of these elevators are the ordinary platform freight elevators, with the exception that they are giants compared with any others in this city, the platforms being 15 feet square, and having a lifting power of over 8 tons, each elevator lifting 75 barrels of flour at one load. The most novel feature of the machinery is the barrel and package elevators built by the Link Belt Machinery Company, of this city. These elevators are so built that they automatically raise and lower barrels and packages, at the same time loading and unloading at any floor by a most ingenious device. They have a combined capacity of over 15,000 barrels and packages in a day of 10 hours. And as for strength, as one of the gentlemen present said, "they could pull the basement right up through the roof if they had any way to fasten it on." The Chicago, Milwaukee and St. Paul Railroad Company was represented by W. Wilson, assistant manager; the Link Belt Machinery Company by General Manager F. J. Pierce. The house will be opened to the public on April 1.

The Essex Horse Nail Company, Essex, N. Y., for whom J. C. McCarty & Co., are agents, 97 Chambers street, New York, have recently been increasing their capacity about 25 per cent., and the demand for their goods is reported as having been so satisfactory during the past six months that for the most of the time the company have been behind their orders. Their Essex nails are described as made from the best imported stock and manufactured with special care, while their "Lyra" nails are alluded to as superior to other second-grade nails on the market. Their sales for the past year show an increase of about 50 per cent. over sales of previous year.

The Geneva Tool Company, Geneva, Ohio, have recently put down a well for natural gas, which they succeeded in striking at a depth of about 700 feet. They are now running five forges with gas, with good indications that several more can be run as soon as the gas can be applied to them. The company report that they are much pleased with the use of gas, as they find it better than coal for their work.

At a meeting of the stockholders of the Bryden Horse Shoe Works, Limited, of Cataqua, Pa., held on the 16th ult., Chas. K. Barnes, of the firm of Justice Cox, Jr. & Co., Philadelphia, was chosen chairman, in place of Joshua Hunt, deceased.

The chain makers in the employ of the Baker Wagon Iron Company, of Beaver Falls, Pa., have received an advance of 10 per cent. in wages.

The Illinois Malleable Iron Company, of Chicago, manufacturers of pipe fittings and malleable iron and brass castings, whose works were entirely destroyed by fire last summer, are just commencing operations in their new factory. They have enlarged their capacity over 50 per cent., and now have a building that insurance men describe as "slowly combustible," commonly called fire-proof.

**Miscellaneous.**

On the 1st of January last Col. J. M. Schoonmaker, of Pittsburgh, sold his coke interests to the firm of J. M. Schoonmaker & Co., taking in payment part cash and stock in the firm. The firm has now increased its capital stock from \$500,000 to \$1,300,000, and is composed of the following gentlemen: President, Col. J. M. Schoonmaker; secretary and treasurer, S. L. Schoonmaker; general manager, Capt. J. S. Schoonmaker, and general agent, W. C. McGee. The firm is now building 132 new ovens at the Redstone works, and when they are completed will have 1500 ovens in all.

The Illinois Natural Gas Company, of Chicago, have been incorporated to bore for gas, coal, oil and other minerals. Capital, \$15,000. Incorporators: George M. Irwin, Sidney C. Easton and Marcus Hatch.

The Fieldhouse & Dutcher Mfg. Company, a corporation organized under the laws of Illinois, have succeeded to the business of Fieldhouse, Dutcher & Belden, of Chicago, manufacturers of wrought-iron pipe and fittings, brass goods, &c., and wholesale jobbers of plumbers' supplies. The copartnership between Joseph Fieldhouse, George W. Dutcher and Charles W. Belden expired by limitation on the 10th inst. The officers of the new company are: Joseph Fieldhouse, president; George N. Dutcher, vice-president; Joseph Fieldhouse, Jr., treasurer, and

per stamped with concentric corrugations, and have already established for themselves a flattering record for steam pipe packing and other similar purposes. The gaskets we believe are extensively used by the New York Steam Company in connection with their underground mains, and have in every instance given very satisfactory results.

## Hardware.

The Arms Bell Company, a new organization of capitalists, of Youngstown, Ohio, have purchased the Arms, Bell & Co. Nut and Bolt Works at that place, which have been in the hands of receivers for several years, and have started the works in operation. The officers are: President, Myron C. Wick; vice-president and treasurer, W. H. Baldwin, and secretary, John A. Finch. Mr. Baldwin will have charge of the new company's business affairs.

The Washington C. H. Nail and Iron Company, Washington Court House, Ohio, have been incorporated with a capital of \$100,000. The incorporators are Martin Grove, F. C. Coffman, S. W. Cissna, Dr. J. F. Dennis, John N. Vandeman and Frank Chaffin. The firm will erect a mill and operations are expected to begin within a year.

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The Bailey Wringer Machine Company, Woonsocket, R. I., are stated to have a daily production of 800 wringers, which is referred to as the largest number turned out by a y concern in the world. The company have a house in London under their own management and report a growing business abroad. Two new styles of wringers will soon be brought out by the company, and it is expected that they will be ready for this season's trade.

It is rumored that the National Tube Works Company, Limited, of McKeesport, Pa., are considering the advisability of erecting a large rolling mill at West Newton, Pa. The citizens of the latter place have offered the company \$20,000 and 10 acres of ground to secure the plant.

Correspondence between the parties interested has already commenced, and it is thought the project will be consummated at an early date.

The St. Paul Harvester Company, of St. Paul, Minn., have gone out of business, and their machinery, consisting of drill presses, lathes, and foundry and smiths' tools, are being disposed of at private sale. The Minnesota Terra Cotta Works will move into the building and sublet power to parties in need of it.

The E. Walker Tool Co., Erie, Pa., in view of the growing demand for their tools have decided to build a new shop and supply it with the latest and best machinery. Their manufactures include, it will be remembered, Walker's Adjustable Face Plane, Detachable Chisel Handles, Micrometer Surface Gauge, and Micrometer Marking Gauge.

The Essex Horse Nail Company, Essex, N. Y., for whom J. C. McCarty & Co., are agents, 97 Chambers street, New York, have recently been increasing their capacity about 25 per cent., and the demand for their goods is reported as having been so satisfactory during the past six months that for the most of the time the company have been behind their orders. Their Essex nails are described as made from the best imported stock and manufactured with special care, while their "Lyra" nails are alluded to as superior to other second-grade nails on the market. The new company being organized on a sound financial basis, and having bright prospects for trade, they feel that they will soon be able to regain the old business.

The large stove and mantel foundry of W. L. Sharp & Son, located in Steubenville, Ohio, was damaged by fire to the extent of \$4000 on the 23d ult. This foundry has twice before been destroyed by fire, and on April 1 of last year was rebuilt at a cost of \$10,000.

The Fish Bros. Wagon Company, with a capital of \$250,000, succeed the firm of Fish Bros. & Co., at Racine, Wis., in the manufacture of freight, farm and spring wagons. They will manufacture this year about the usual amount of the old firm's productions.

The large stove and mantel foundry of W. L. Sharp & Son, located in Steubenville, Ohio, was damaged by fire to the extent of \$4000 on the 23d ult. This foundry has twice before been destroyed by fire, and on April 1 of last year was rebuilt at a cost of \$10,000.

The Fish Bros. Wagon

## Carbons for Electric Lights.

The manufacture of carbons for electric lights has become an important business. At a trial in Cleveland for alleged infringement of patent a witness testified that of 150,000 carbons burned daily in the United States 100,000 are manufactured in Cleveland, where there are 20 furnaces. The carbons are made chiefly of the residuum of oil after it has been refined, but the deposit about natural gas wells is also coming into use. The material is ground to a powder, a little pitch is added, and the substance is then placed in molds. These are packed in boxes and the latter placed in a furnace, where they are subjected to the most intense heat. The capacity of an ordinary furnace is 45,000 carbons. Through the use of a movable furnace roof, the patent on which forms the subject of contention, two furnaces are constructed side by side, and, while the carbons in one are being burned, the other is loaded with boxes of molds. Under this system two men load a furnace in one day, the carbons are thoroughly burned in five days, and the cooling process continues only 24 hours.

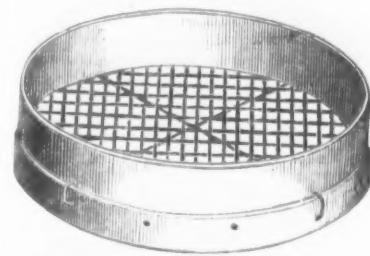
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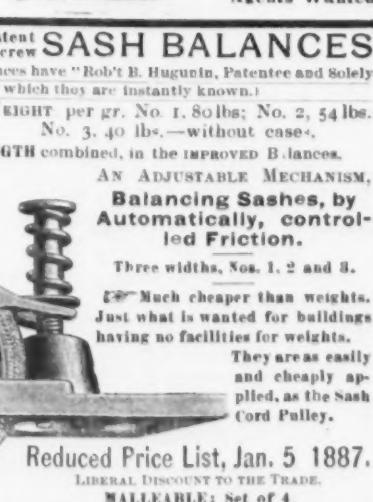
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Garden City Fire Engine-House Spring

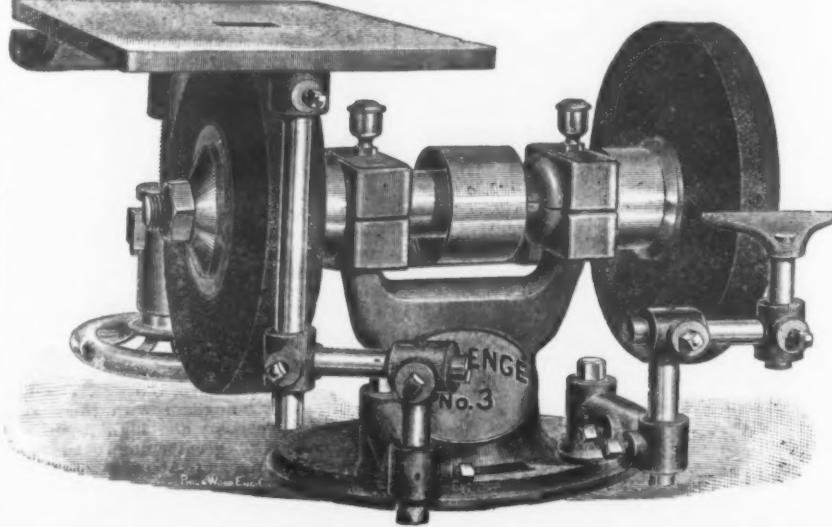
Hinge. PAT. JUNE 23, 1885.



This hinge throws the door open and is especially adapted to fire engine-house doors, as they are held shut and require the hinge to throw the door open when released

DIEBEL MANUFACTURING COMPANY.

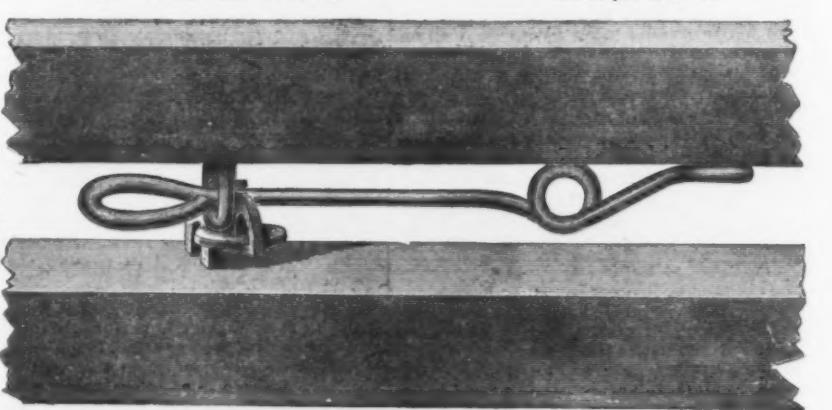
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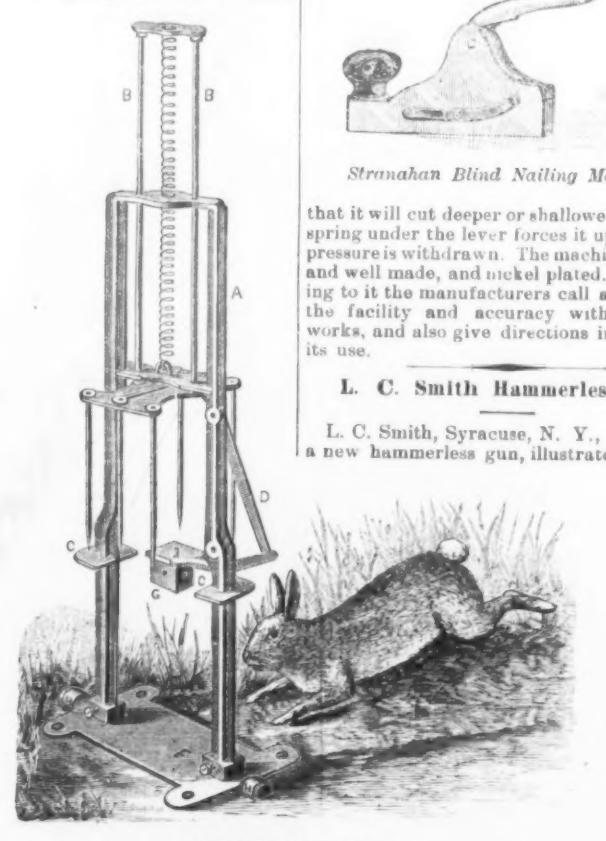
## Mansfield's Self-Sustaining Automatic Rope Blocks.

Topping & Fox, 96 Chambers street, New York, are putting on the market these blocks, which are represented in the accompanying illustrations, which explain their construction and special features. Fig. 1 represents an iron three fold rope block sustaining a weight with a chain sling, and Figs. 2 and 3 give sectional views showing the action of the grip. Fig. 2 is a sectional view of the standing block showing the



Fig. 1.—Mansfield Self-Sustaining Automatic Blocks.

of the trigger E, and is provided with holes through which strings are passed in fastening on the bait. Two iron staples, H H, are furnished with the attachment to be used in fastening the plate F to the ground, and holes for screws are also made in the plate, as indicated, and screws furnished, so that it may be fastened to a floor or board when desired. It may be added in further description of the trap itself that it consists of the frame A constructed with two cross bars in which are holes to guide the needle bars B B. At the lower end of the needle bars is attached a plate to which six needles are made fast, three on each side of the plate. To the upper end of the needle bars is attached a platform for the purpose of holding a weight, either a brick or stone, which serves to operate the trap when set off by the mole. Springs are also furnished



Olmsted's Animal Trap.

to operate the trap. The spring can be readily attached and detached, it simply being hooked to the trap, so that either a weight or spring can be used to operate it. To the frame is attached the lever D and trigger E, both made to work loosely on pivots. This trap is constructed entirely of steel and iron.

## The Cheney Lawn Mower.

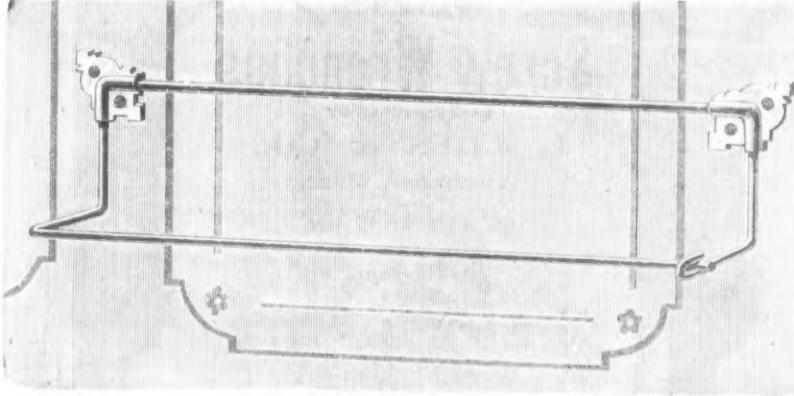
This machine, which is the invention of C. W. Cheney, Athol, Mass., is manufactured by Mather & Todd, Leominster, Mass., and is represented in the illustration given below, from which it will be observed that it is a radical departure from the style of lawn mowers in general use. The knives are arranged in two sets and make a regular shear cut. They are operated by a double crank motion which is described as very rapid. They are not shaped like the knives of common mowing machines, as they have one straight and one slanting side. They can be sharpened, it is claimed, by any one of ordinary intelligence, and can be taken out to grind by the removal of three screws, and as there is but one way they will go back, it is impossible to replace them in a wrong position. The parts are all made interchangeable. The advantages which are alluded to as possessed by this machine include among others the following: That the mower will cut anything in the shape of grass, whether short or tall, weeds, clover, &c.; that the wheels do not run in the standing grass; that it will cut all the grass up to a stone wall, fence or tree without using a sickle or knife; that it will cut a lawn as close as any rotary machine, and that it works easily, and is not liable to get out of order. It is also claimed that it can be used with profit to trim up in

the cocking and safety mechanism of which is shown in Fig. 2. Attention is called by the manufacturer to the mechanical movement for cocking the tumblers as a device commanding itself for simplicity, reliability and ease of manipulation. The gun has steel-free, bridle locks with interchangeable main springs, and these locks are referred to as taken out for oiling and inspection as readily as the locks of a hammer gun. Attention is specially called to these points: That there is but one spring in each lock, instead of three or four, as is the case with others; that the cocking device has no springs whatever, and that there is no thrust on the four end either in cocking or extracting shells, a point on which they lay special emphasis as possessed

by a pressure of the lever the bit is carried downward into contact with the wood, when by a continued movement of the lever it is forced the proper depth into the wood, and then carried along horizontally the requisite distance, so as to raise the grain sufficiently to permit the driving of the nail, and in such a form that it is not liable to break. The length of the instrument is about 4 1/4 inches, and the width of the chisel about 1/4 inch. Under the handle in front of the instrument rubber is placed to keep it from slipping. Through the opening in the top the screw holding the bit or chisel in position can readily be reached, so as to permit its removal for sharpening, or its adjustment, so

in two bearings 1 1/8 inches apart, which prevents the lever from lopping and rubbing the tang when turned for opening. The connections between the lever and bolt are such that no lost motion can occur; the bolt

upper corners. The spring of the wire over which the towel is passed holds it in position shown in the cut, it being easily disconnected when it is desired to do so. The entire rack is handsomely nickel-plated, and



Stranahan Blind Nailing Machine.

that it will cut deeper or shallower. A spiral spring under the lever forces it up when the pressure is withdrawn. The machine is neatly and well made, and nickel plated. In alluding to it the manufacturer calls attention to the facility and accuracy with which it works, and also give directions in regard to its use.

## L. C. Smith Hammerless Gun.

L. C. Smith, Syracuse, N. Y., is making a new hammerless gun, illustrated in Fig. 1



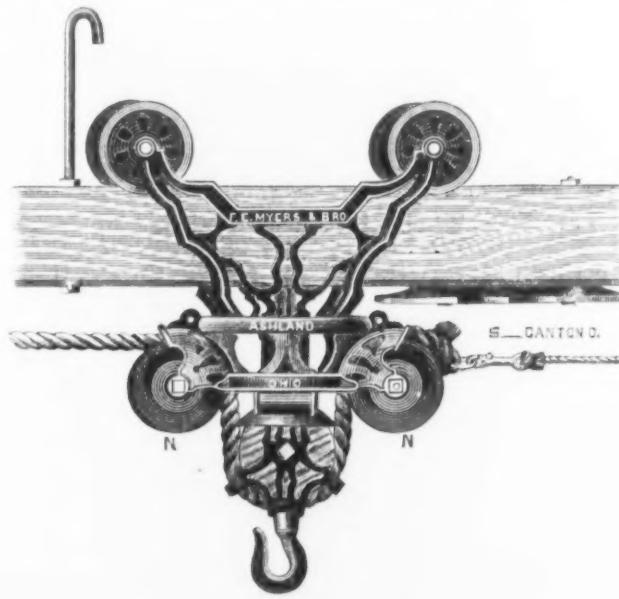
Olmsted's Animal Trap.

the cocking and safety mechanism of which is shown in Fig. 2. Attention is called by the manufacturer to the mechanical movement for cocking the tumblers as a device commanding itself for simplicity, reliability and ease of manipulation. The gun has steel-free, bridle locks with interchangeable main springs, and these locks are referred to as taken out for oiling and inspection as readily as the locks of a hammer gun. Attention is specially called to these points: That there is but one spring in each lock, instead of three or four, as is the case with others; that the cocking device has no springs whatever, and that there is no thrust on the four end either in cocking or extracting shells, a point on which they lay special emphasis as possessed

spring is longer than is used on other guns, is commendable for its simplicity, neatness and durability.

## The New Myers Combination Carrier.

The cut given herewith represents the Myers Combination Reversible Carrier with swivel attachment, which has recently been



A New Towel Rack.

close the gun, and has strength enough to withdraw any tight shell.

In his circular relating to this gun Mr. Smith alludes to the combined automatic and independent safety found in it, as adapting the gun to use in the field and at the trap, making the point that in an instant the shooter can change his safety from automatic to independent, and vice

put on the market by F. E. Myers & Bro., Ashland, Ohio, thus still further enlarging the variety of these goods. It will be observed that this carrier is a straight reversible carrier, having the special features and advantages of the double lock reversible made by the same manufacturers, and that it has in addition a swivel attachment. This is alluded to as making it a complete machine, and adapting it to the requirements of the dealer to sell by, and rendering it exceptionally convenient and efficient for use as a hay and merchandise carrier. It is made to run on either a 4 x 4 wood track or on Myers's patent steel track, and is described as made of malleable iron, thoroughly reliable, of a neat pattern and well finished.

In order to show that under certain circumstances war does not really cause a great decline in the production of iron, the *Eisenzeitung* quotes the following figures of output in Germany:

	1869.	1870.	1871.
Iron ore	3,159,425	2,627,526	3,382,756
Pig iron	1,234,416	1,217,220	1,318,925
Castings	289,869	295,430	345,119
Bar iron	742,028	740,391	847,657

During the Franco-German war, therefore, the make of the German works were little affected. The records of France probably tell a much different story, however.

A business index is afforded by the unprecedented demand for office buildings in New York City, where Western firms and foreign agencies seek to be represented.

At the last meeting of the association of German Iron and Steel Manufacturers, Dr. Wedding described a method for the estimation of phosphorus, communicated to him by George W. Goetz, of the Otis Iron and Steel Company. With the aid of this

by no other hammerless gun. It is also claimed that the gun has an exceptionally well proportioned frame, giving it special merit for symmetry of outline, hang, balance, &c. From the accompanying cut it will be seen that the mechanism of this gun is similar to that of their hammer gun, and of it the following description is given:

Our gun is distinctively a top-acting gun, bolted or locked at great a distance as is practical from the hinge joint, to utilize the advantage of a long lever-age, thus reducing the strain on the bolt ing mechanism to the lowest possible minimum. The rotary bolt is made from one solid piece of steel, and is provided with a strong forward arm, which passes completely through the mortise in the extension of the rib and under the solid

versa, by a motion of the thumb, so that the gun at the trap or in the bow-house could be fired indefinitely without moving the safety slide, and in the field be used with the automatic, which locks the triggers whenever the gun is open for loading. Attention is specially called to the fact that this gun has fewer parts than others on the market, and, instead of being complicated and liable to get out of order, is exceedingly simple and satisfactory for use. The gun is described as made of the best materials and in five different qualities, the list prices ranging from \$80 to \$300.

## A New Towel Rack.

The accompanying illustration represents a new patented towel rack that is manufac-

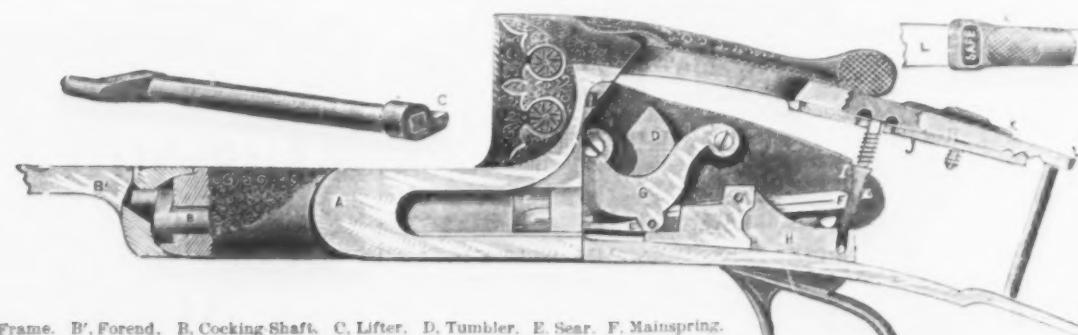


Fig. 1.—The L. C. Smith Hammerless Gun



The Cheney Lawn Mower.

action is perfectly automatic and safe, working instantaneously. It is stated that the grip would hold securely even if the rope were worn away half its original size. This device is alluded to as being applicable to all tackle blocks, either wood or iron, and is stated not to increase the bulk of the block, and adding to the weight of any block, say for an inch diameter of rope, only about 1 1/4 pounds. It is also stated that for the machine shop, in the erection of machinery and lifting heavy pieces in lathes, planers and drills, as well as in other uses, one man's service may be dispensed with and a finer adjustment had than can be obtained by the chain block. This grip device is also applied to hand hoists of every description, dumb-waiters, merchandise and wheel and dumb hoists for stores, factories, mills, &c.

## Olmsted's Animal Trap.

This trap is illustrated in the accompanying illustration, and is made by L. H. Olmsted, Corona, N. J., whose mole trap, the essential portion of this, has been made for some time, and is familiar to the trade. The trap represented in the cut consists of the mole trap with an attachment adapting it for use above ground in catching rabbits, opossums, skunks, &c. The attachment consists of the block G and the iron plate F, which are constructed so as to receive the legs of the trap, and are secured to the trap by two screws. The block G is attached by a spring clamp to the under side

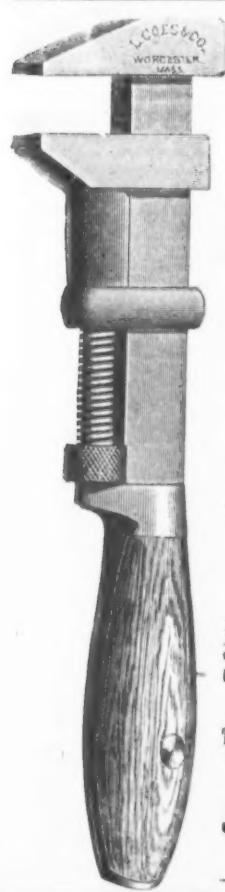
## Blind Nailing Machine.

Stranahan Bros., Minneapolis, Minn., are manufacturing the Stranahan Blind Nailing machine, which is represented in the accompanying illustration. As its name indicates, it is used for raising the wood for blind nailing, and for this purpose has a bit or chisel which is operated by the lever shown in the cut. The instrument is placed on the wood and held in position by one hand, when

the metal of the frame 1/8 inch, which, together with the backward flange passing through the slot in the end of the extension, makes the strongest possible fastening. The lever and post are forged from one solid piece, thereby avoiding the possibility of the lever becoming loose on the post. The post turns

and sold by M. C. Henley, Richmond, Ind. It will be observed that it is exceedingly simple in design and construction, consisting, as indicated, of one continuous piece of wire bent in the form represented and fastened to the wall as shown by the plates which are placed over the

method phosphorus can be estimated in half an hour, which is about the time required for the method first introduced at the works of Bolckow, Vaughan & Co., and since used at some American steel mills. Dr. Wedding has proved the Goetz method, and thinks that the time may be reduced to 15 minutes.



L. COES'  
GENUINE IMPROVED  
Knife Handle  
PATENT

### Screw Wrenches

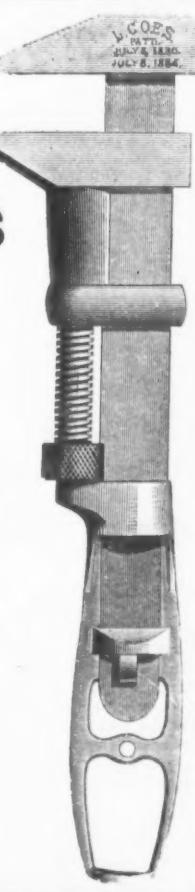
MANUFACTURED BY  
L. COES & CO.,  
Worcester, Mass.  
ESTABLISHED IN 1839.

Patented  
July 6, 1880.  
TRADE MARK  
REGISTERED  
J. C. McCARTY & CO.,  
TRADE MARK  
REGISTERED  
March 21, 1874.

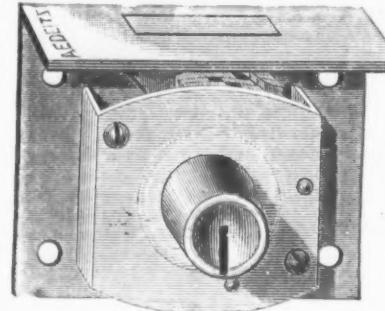
Sectional view illustrates our NEW  
KNIFE HANDLE, showing the Malleable  
Iron Frame and Shank of Bar keyed  
into position.  
Screw Straight Bar, Extra LONG NUT  
FOR SCREW IN JAW.

The Best Made and Strongest Wrench in the Market.  
Send for Illustrated Price List and Circular.

J. C. McCARTY & CO.,  
NEW YORK,  
Sole Agents.

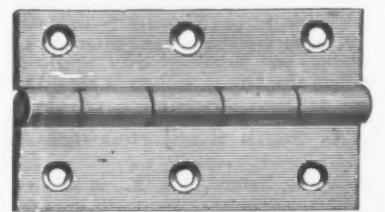


### A. E. DEITZ.



No. 51 Lock.  
J. C. McCARTY & CO., Agents,  
97 Chambers and 81 Reade Sts.,  
NEW YORK.

Factory, BROOKLYN, E. D., N. Y.



W. & J. TIEBOUT,  
MANUFACTURERS OF  
BRASS, GALVANIZED & SHIP CHANDLERY  
HARDWARE.  
Nos. 16 & 18 Chambers Street,  
NEW YORK.

ALWAYS GIVES THE  
UTMOST SATISFACTION.  
Main Belting Co.,  
Manufacturers of  
THE LEVIATHAN  
COTTON  
BELTING.  
Unsurpassed for  
Strength, Durability and  
Cheapness.  
Made to any Length,  
Width and Strength.  
Main Driving Belts.  
Guaranteed to Run  
Straight, Even Through  
the Pulley.  
No Cross Joints, Un-  
affected by Damp.  
Cling well to the Pulley.  
Has no equal. In fact,  
is THE BELT.  
MAIN BELTING  
COMPANY,  
S. W. cor. Ninth and Reed  
Sts., Philadelphia.  
Also  
24 East Randolph St.,  
CHICAGO.

THE CHAMPION LEVER  
BLOWERS & FORGES

Are the Leaders of the World.



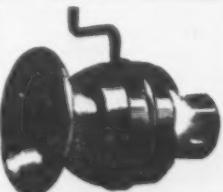
CHAMPION  
BLOWER &  
FORGE CO.,  
Corner  
Cherry & James,  
Lancaster, Pa.

FINEST QUALITY, SUREST TEMPER AND  
BEST MADE.  
SEE THAT OUR STAMP IS IN THE HEAD OF EACH AXE. IT IS A  
GUARANTEE OF A 1 QUALITY.  
All-Steel Axes, Hatchets and Adzes. Peerless Broad-Axes, the Best  
in the World.  
Boys' Axes, Hunters' Hatchets, Bush Hooks, &c., of the Finest Quality.  
Send for Catalogue.

POWELL TOOL CO., CLEVELAND, OHIO, U. S. A.

W. R. OSTRANDER & CO.,  
51 and 53 ANN STREET, NEW YORK,  
Manufacturers of  
SPEAKING TUBES, WHISTLES, ELBOWS, ORAL ANNUN-  
CIATORS, BELL & ELECTRIC WIRE TUBING.

Complete Outfits of Speaking tubes, Whistles, Elbows, Oral Annun-  
ciators, Bell & Electric Wire Tubing.  
The Hardware constantly on hand. Catalogues  
on application. Factory, DeKalbave, near Knick-  
erbocker, Brooklyn, N. Y.

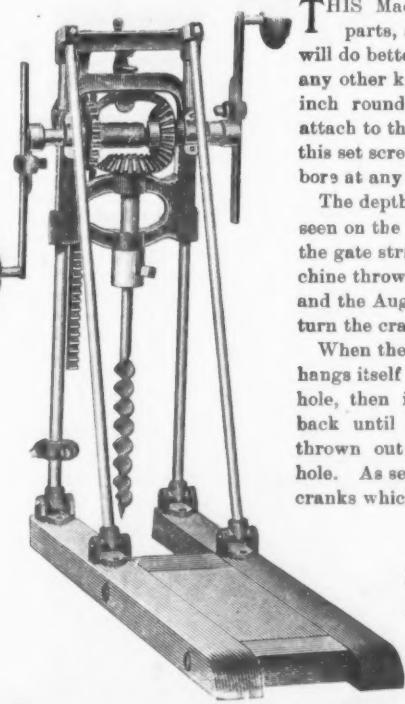


### MILLERS FALLS BORING MACHINE.

THIS Machine has been fully perfected in all its parts, and is now sold with full warrant that it will do better work and give better satisfaction than any other kind in use. The frame is made of half-inch round steel rods; the braces are the same and attach to the rods at the top by a set screw. When this set screw is loosened, the frame falls over so as to bore at any desired angle.

The depth of hole to be bored is fixed by a stop, as seen on the left hand upright rod in the cut. When the gate strikes this stop a latch is lifted and the machine throws itself into gear by the use of a spring, and the Auger is lifted out of the hole by continuing to turn the crank in the same direction.

When the Auger is drawn from the hole the frame hangs itself up until the machine is moved to the next hole, then it is dropped down by turning the crank back until the Auger strikes the wood, when it is thrown out of gear and proceeds to bore the next hole. As seen in the cut, the machine has adjustable cranks which fully regulate its speed and power.



#### PRICES:

Machine, without Augers, \$7.50  
Augers in sets, 18, 23, 41 quarters.  
\$3.00. \$3.75. \$6.75.  
Sizes of Augers (1, 1 1/2, 2) (1, 1 1/4, 1 1/2, 2)  
(1/2, 5/8, 3/4, 1, 1 1/4, 1 1/2, 2).

MILLERS FALLS CO.,  
74 Chambers Street, New York.

### CHAMPLAIN Forged Horse Nails.

MANUFACTURED BY THE

NATIONAL HORSE NAIL CO.,  
Vergennes, Vermont.

HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST  
NORWAY IRON AND WARRANTED.  
WAREHOUSE  
97 CHAMBERS AND 81 READE STREETS, NEW YORK.  
J. C. McCARTY & CO. Sole Agents.

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E. T. CANBY,  
Sec. and Treas.

### THE SEIDEL & HASTINGS CO.

WILMINGTON, DELAWARE,

New York Office, No. 221 Pearl, Corner Platt Street.

MANUFACTURERS OF

### BEST CHARCOAL BOILER PLATES, AND PLATE IRON GENERALLY.

ALSO BEST QUALITY HOMOGENEOUS STEEL PLATES.

We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when desired. One hundred and sixteen tests of this iron, made during the last three years by the U. S. Inspectors of Steam Vessels, show an average tensile strength of 58,808 pounds to the sectional square inch, and an average reduction of area of the fractured section of 30% per centum. Our prices are as low as the production of a good article will admit of.

POTTSVILLE IRON & STEEL CO.,  
POTTSVILLE, PA., Manufacturers of all kinds of

### STRUCTURAL STEEL AND IRON

Viz., BEAMS, CHANNELS, TEES, ANGLES, PLATES AND BARS; Also STEEL  
AND IRON AXLES FOR FREIGHT AND PASSENGER CARS.

This Steel is manufactured by the CLAPP-GRIFFITHS process, and is specially adapted, in addition to the above, for Boiler and Bridge Rivets, Wire Rods, Nail Plates, &c. &c. Our Mild Steel is well adapted for use in place of the best quality of Wrought Iron; where a greater strength and ductility is required, it welds readily as Iron. Also Billets, Saws of all sizes and any desired temper. Shafting of all sizes in stock, from which prompt shipments can be made.

Brewery, Malt and Ice House Construction a Specialty.

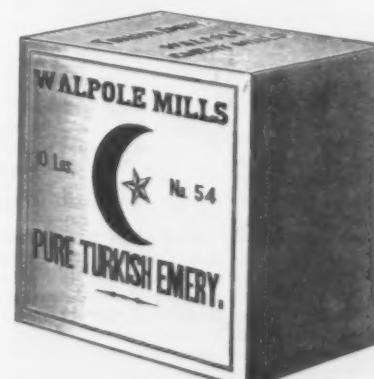
### Hermann-Parker Hardware Mfg. Co.,

MANUFACTURERS OF

### GREY IRON SHELF HARDWARE.

Our Specialties: Axle Pulleys, Well Wheels, Grind-  
stone Fixtures, Hay-fork Pulleys, Wash-boiler  
Handles, Stove Lifters and Post Mauls.

Works: 11th and Papin and 12th and Gratiot Streets, St. Louis.  
New York Office, W. E. Sabin, 96 Chambers St.





## Manhattan Leather Works, 298 Broadway, New York.

### THE INDESTRUCTIBLE COAT AND HAT HOOK;

Screws packed  
with Hooks.

PATENTED.

This Hook is easily put up and will last a lifetime, as it is made from one continuous piece of Steel Wire and will not break or bend.



PRICE LIST.

No. 10, Coppered, per gross	... \$3.75
No. 20, Japanned, " "	4.25
No. 30, Chestnut Bronze, " "	4.25
No. 40, C Tinned, per gross	6.00
No. 50, Brass Plate, " "	12.50
No. 60, Bronze Plate, " "	12.50
No. 70, Nickel Plate, " "	12.00

MANUFACTURED ONLY BY

**THE PERKINS AND BRADLEY MFG. CO.,**

MANUFACTURERS OF

Patented and Special Wire Hardware,

Box 1404 A.

NEW HAVEN, CONN.

New York Depot. RUSSELL & ERWIN MFG. CO.

## SYRACUSE CHILLED PLOW CO. SYRACUSE, N. Y.

MANUFACTURERS OF

Right & Left Hand Sulky Plows, Swivel Plows,  
Reversible Sulky Plows, Single, Double & Wing Shovels,  
Steel Beam Plows, Steel Frame Cultivators,  
Iron Beam Plows, Wood Frame Cultivators,  
Wood Beam Plows, Road Scrapers,  
Grappling Hay Forks, Etc., Etc., Etc.

Send for ILLUSTRATED CATALOGUE and PRICE-LIST.

### INDURATED FIBRE PAIL.

LIGHT!  
STRONG!  
DURABLE!

No Hoops to drop off!  
No Bottom to drop out!

INDURATED FIBRE CO.,  
OF LOCKPORT, N. Y.,  
MAKERS,

New York Office, 102 Chambers St.  
Philadelphia Office, 118 S. Delaware Av.  
Baltimore Office, 32 Light St.



SEAMLESS!  
TASTELESS!  
HANDSOME!

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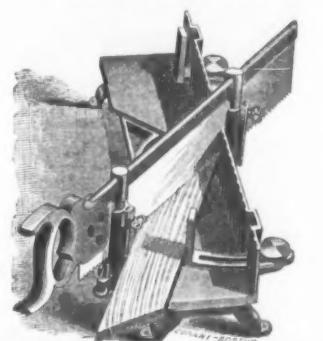
Wm. Bingham & Co., Cleveland, Ohio.  
Standard Bros., Detroit, Mich.  
Crescent Adams & Co., Chicago, Ill.  
Strong Hackett Hdw. Co., St. Paul,  
Minn.  
M. M. Buck & Co., St. Louis, Mo.  
Stanifer, Eshelman & Co., New Orleans, La.  
Walter Woods & Co., Hamilton and  
Toronto, Ont.

### The "Easy" Bolt Clipper

MANUFACTURED BY  
PORTER & WOOSTER  
66 & 68 Beverly St., Boston.

For sale by the Trade generally.  
Send for Circular No. 20.

### LANGDON MITRE BOX COMPANY, Millers Falls, Mass.



New Langdon Mitre Box Improved.  
Cuts from right angles to 73 degrees.  
The only Box adjustable for mitring circular  
work in patterns, emery wheels and segments of  
various kinds.

### DISSTON & SONS' SAWS.

12 to 36 inches long.  
2 to 6 inches wide on the back.



Rogers Mitre Planer.  
Planes any possible angle.  
Send for Circulars  
Sold by the Hardware Trade generally.  
Electrotypes free to advertisers.

### CHANDLER'S Ice-Cutting Machine.



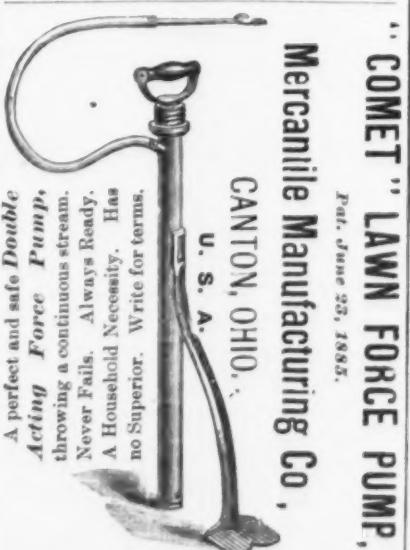
Any piece of ice that will go into the hopper  
will go through, being drawn in by the peculiar  
shape of the teeth. This arrangement is fully  
protected by letters patent, and cannot be used on  
other cutters.

Made in Five Sizes—No. 1, for Bar Tops and  
Soda Counters, No. 2, for Family and Universal  
Use, No. 3, for Hotels, Hospitals and Boarding  
Houses, No. 3, for large Hotels, Confectioners,  
&c. &c.

SEND FOR PRICE LIST.

Address

G. IRVING ABENDROTH,  
No. 28 Cliff Street, New York.



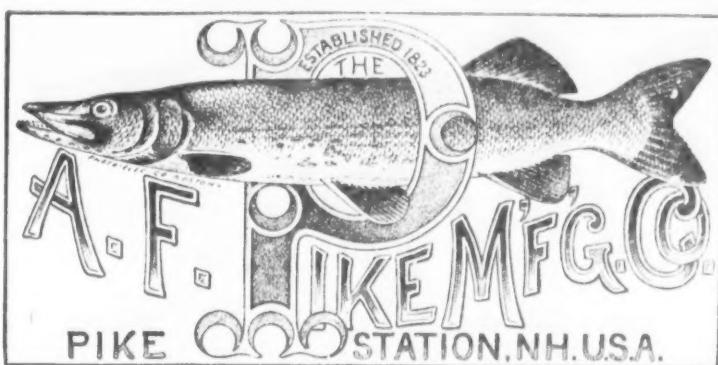
COMET LAWN FORCE PUMP.  
U. S. A.  
CANTON, OHIO.  
Pat. June 22, 1885.

### THE "EMPIRE" WRINGER.



EMPIRE WRINGER CO., AUBURN, N. Y.  
Purchase Gear.  
Wear Least.  
Tub Wringers, Bench Wringers, Clothes  
Drying Bars, &c.

OUTSIDE BLINDS OPENED CLOSED  
AND AUTOMATICALLY FASTENED  
IN ANY POSITION FROM THE INSIDE  
WITHOUT RAISING THE WINDOWS  
— OR SCREENS, BY THE  
DODD SHUTTER WORKER.  
THE DODD MAN'G CO.  
19 PARK PLACE ROOM 10. NEW YORK.



Our Cheap, \$1.50 per gross Scythe Stone are

### "LEADER" RED ENDS,

Warranted to be the Best and Cheapest Imitation Red Ends in the Market. They are frauds like all other imitations and not to be compared to the

### Genuine Indian Pond Red Ends,

which are pronounced by all good judges, the world over, the best Scythe Stone in the world to give a coarse, sharp edge quickly.

Our father established the reputation of the Red End Brand by painting the end of the Extra and No. 1 "red," but within a few years very poor, mean stone have had the ends painted red, and have been sold for Red Ends.

To Get the Best, Buy Only

### PIKE'S GENUINE INDIAN POND, RED END, EXTRA AND NO. 1.

There is no satisfaction or profit for any one in handling cheap, worthless Scythe Stones, while there is profit and satisfaction to every one in good, reliable brands, such as the following:

#### PIKE'S Indian Pond No. 1 and Extra,

- " Lamoille and Black Diamond,
- " Genuine 9 and 10 inch Ragg,
- " Diamond and Gritty Pearl,
- " Magic and Willoughby Lake,
- " Quinebog and White Mountain,
- " Dodge Chocolate."

The above are No. 1 selected stones from different quarries, strong, keen, sharp grits, that will cut away the steel quickly, and can be used without water and not glaze. Remember, we have plenty of cheap Scythe Stones of all kinds if wanted; also, that we are headquarters for Oil and Water Stones, Razor Hones, &c., having seven mills and 2000 acres of quarry lands.





# POST'S "ZERO" METAL,

Registered in U. S.,

## FOR JOURNAL BEARINGS.

THOMAS A. EDISON, President.  
SAMUEL INSULL, Secretary.

CHAS. BACHELAR, Treas. and Gen'l Manager.  
JOHN KRUESE, Ass'tant General Manager.

C. WEBSTER, President.  
S. M. BURHAM, Secretary.

W. T. ALLEN, Treasurer.  
J. W. CHAMBERLAIN, Supt.

### THE EDISON MACHINE WORKS,

CABLE ADDRESS : 86 to 108 Goerck Street,

"Xydsun, New York."

Messrs. E. L. Post & Co., No. 10 Peck Slip, N. Y.

Gentlemen:—At a test made under our supervision with a machine designed for testing the friction of different metals, the accuracy of which cannot be doubted, we beg to inform you that the average friction of metals tested was 120 per cent, more than the Post's Zero Metal.

Very respectfully yours, etc.,

W. M. McDougall, Supt.

### MORGAN IRON WORKS,

JOHN ROACH & SON, Proprietors, Foot Ninth Street, East River.

NEW YORK, Nov. 17th, 1886.

Messrs. E. L. Post & Co., No. 10 Peck Slip, N. Y.

Gentlemen:—Having been interested in the progress of the comparative test of Babbitt and Non-Friction Metals lately made at the Edison Machine Works, would say that they were accurate and results obtained correct. Although our own best Babbitt and Baker's White Brass submitted by us for test were badly beaten, the information gained reverts to our advantage in so far as we now recognize that, by the aid of the metal-testing machine, it has opened the way to procure the "Post's Zero Metal," which we do know to be A No. 1. Very respectfully yours,

HENRY LEVRAT, Supt.

Result of Comparative Tests POST'S ZERO METAL, with other Babbitt and Non-Friction Metals under Supervision of Edison Machine Works, Goerck St., New York, Oct. 25, 1886:

	Carried Weight Per Square Inch	Revolution of Shaft Per Minute.	Temperature of Grease.	Average Temperature.	Percentage of Friction over Post's Zero Metal.	
Post's Zero Metal . . .	90 lbs	740	50	109	—	
Edison Machine Works Best Babbitt . . .	90 "	740	50	147	64	The result of these tests show an average of
Hart Metal . . .	90 "	740	72	139	81	
Taylor's Arctic Metal .	90 "	740	66	160	118	
Thos. Wildes Genuine Babbitt . . .	90 "	740	66	141	74	120%
J. Roach & Son Best Babbitt . . .	60 "	740	66	205	223	more friction than Post's Zero Metal.
Baker's White Brass .	60 "	740	66	141	74	
Illinois Smelting Co. .	45 "	740	59	163	108	
Diamond Metal . . .	45 "	740	59	217	216	

OFFICE OF

### Webster, Camp & Lane Machine Co.,

NORTH MAIN STREET,

Near Academy of Music,

AKRON, OHIO, Jan. 12, 1887.

Messrs. E. L. Post & Co.,

NEW YORK.

Gentlemen:—With pleasure we submit the following comparative tests made by us this day of anti-friction metals. The high record in your favor stamps "Zero Metal" as the most profitable for manufacturers and consumers.

J. W. CHAMBERLAIN, Supt

	Carried Weight Per Square Inch.	Revolution of Shaft Per Minute.	Temperature of Grease.	Average Temperature.	Percentage of Friction over Post's Zero Metal.	Remarks.
Post's Zero Metal . . .	123 lbs	1050	70	117	—	
Hoyt's Genuine Babbitt .	123 "	1050	70	130	28%	The result of these tests show an average of
Post's Zero Metal . . .	90 "	1050	70	109	—	
Paul Reeve's Special .	90 "	1050	70	130	54%	
Hoyt's "Extra" . . .	90 "	1050	70	182	187%	
Phosphor Babbitt, . . .	90 "	1050	70	122	30%	
Hoyt's No. "4" . . .	90 "	1050	70	150	105%	more friction than Post's Zero Metal.
Bostwick's Polar Metal .	90 "	1050	70	121	31%	
Composition Brass . .	45 "	1050	70	116	118%	

### Westinghouse Machine Co.,

PITTSBURGH, PA.

Messrs. E. L. Post & Co.,  
U. S. A.  
NEW YORK.

January 31, 1887.

Gentlemen:—We have this day tested your Post's Zero Metal, in comparison with the following metals, for friction, with results as per table annexed. The small amount of friction produced by the "Zero Metal" is remarkable. The lubricant used in these tests was No. 2 Lard Oil.

Very truly yours,  
THE WESTINGHOUSE MACHINE CO.,  
Per W. A. BOLE, Supt.

	Carried Weight Per Square Inch.	Revolution of Shaft Per Minute.	Temperature of Grease.	Average Temperature.	Percentage of Friction over Post's Zero Metal.	Remarks.
Post's Zero Metal . . .	96 lbs.	1000	78	139	—	
Philadelphia Smelting Co. Genuine Babbitt .	96 "	1000	78	177	62%	The result of these tests show an average of
Mansfield's A-1, of Pittsburgh . . .	96 "	1000	78	171	52%	
Crane Bro's Genuine, of Chicago . . .	96 "	1000	78	198	97%	70% more friction than Post's Zero Metal.

Agents wanted  
in Cities not already  
represented.



Correspondence solicited  
from dealers in  
Manufacturers' supplies.



Price, 25 Cents Per Pound. Put up in 5 lb. bars--100 lb. Boxes.

## E. L. POST & CO., Sole Manufacturers,

NO. 10 PECK SLIP,

NEW YORK.

SEND ORDERS DIRECT TO DEALERS:

GEO. R. LOMBARD, Augusta, Ga.

PHILLIP GRUMMEL, Tiffin, Ohio.

POST & CO., Cincinnati, Ohio.

BUTLER & GARDNER, Pittsburgh, Pa.

MILNER & KETTIG, Birmingham, Ala.

MONTGOMERY IRON WORKS, Ala.

EDWARDS & WALKER, Portland, Me.

H. BUTTERFIELD & SONS, Stafford Springs, Conn.

THE J. P. DONALDSON CO., Detroit, Mich.

W. BINGHAM & CO., Cleveland, Ohio.

LOUIS SCHWARTZ, New Orleans, La.

CAMERON & BARKLEY, Charleston, S. C.

S. M. YORK, Cleveland, Ohio.

SHAW, KENDALL & CO., Toledo, Ohio.

J. LE ROY PINE CO., Troy, N. Y.

J. S. & N. A. WILLIAMS, Utica, N. Y.

F. W. EMERY & CO., Rochester, N. Y.

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GEO. A. SMITH, Richmond, Va.

PETER GERLACH & CO., Cleveland, Ohio.

SUMNER PRATT & CO., Worcester, Mass.

TRAPTON & ANTHONY, Fall River, Mass.

J. H. WYLIE, JR. & CO., Holyoke, Mass.

J. B. FARNUM, Woonsocket, R. I.

J. C. WRIGHT & CO., Fitchburg, Mass.

WATERS & GARLAND, Louisville, Ky.

FREDERICK TAYLOR & CO., Lowell, Mass.

E. A. TIBBIS & SON, Great Falls, N. H.

J. & E. R. BARBOUR, Portland, Me.

BROWN BROS. & CO., Providence, R. I.

COVEL & OSBORN, Fall River, Mass.

BICKFORD & FRANCIS, Buffalo, N. Y.

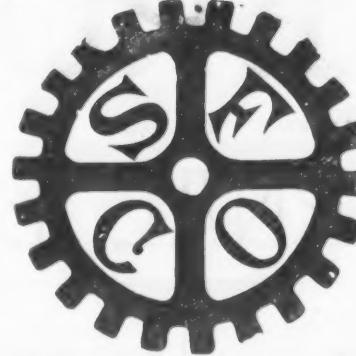
F. I. WEBSTER, Turner Falls, Mass.

F. R. PHILLIPS, Phila.

# GRAY IRON AND BRASS CASTINGS.

To those who are in the market for Castings:

We should be pleased to have you send us drawings, cuts or sketches, or preferably samples of the castings you are using and allow us to quote you our prices. It would be still better to forward patterns with a small trial order on which we will agree to make a satisfactory price. We are confident of our ability to produce castings of the finest quality known to the trade at reasonable prices. We use only the best obtainable materials and approved modern appliances. We employ only steady and intelligent skilled workmen, paying them good wages. While this may make our castings cost more per pound than those of cheap material and poor workmanship, we will guarantee ours to be much less expensive to the user in the end, because of their proper weight and the time and labor saved in the drilling, planing, turning, filing or other finishing. We prefer the reputation of being a high-priced house which does only the very best work to the name of a cheap producer of rough, hard and low-priced castings, out of shape or of heavier weight than the patterns call for. It is astonishing to notice how



much extra weight can be (and often is) added to a casting by a careless, incompetent moulder, rushing out piece work at starvation wages! This is generally overlooked by buyers of cheap (?) castings.

We have lately had the unsolicited testimony from a customer in London, to whom we had shipped some light iron castings, that his workmen were able to finish our castings in one-third the time they required to do the same work on castings from similar patterns made in England!

We have facilities for wood and metal pattern making, drilling, polishing, plating, japanning and the manufacture of hardware and light machines by contract.

**Machinery Castings, Light or Heavy.**

**Low Prices on Large Contracts.**

Freight paid to principal points in New England and New York.

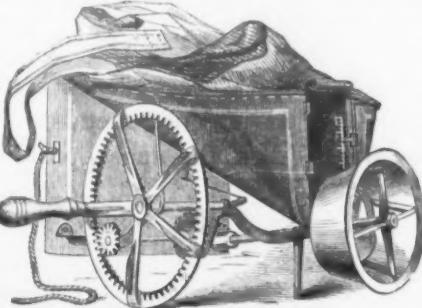
Correspondence Solicited.

**SPRINGFIELD FOUNDRY CO., 93 Liberty Street, - SPRINGFIELD, MASS.**

## PEARCE'S IMPROVED CAHOON BROADCAST SEED SOWER,

For Sowing all kinds of Grain and Grass Seed.

Sows from 4 to 8 acres per hour at a common walking gait, throwing out wheat about 40 feet wide. Does five times as much work as can be done by hand, and better work than



can be done by any other means whatever, and at a saving of  $\frac{1}{3}$  the seed over hand sowing. Any one can operate them, and they can't get out of order.

**Simple, Durable, Cheap and Effective. Pay for themselves in One Day.**

**GOODELL & CO., Antrim, N. H., Sole Manufacturers.**

WRITE FOR CIRCULAR AND PRICES.

**KING'S GREAT WESTERN POWDER CO., CINCINNATI, OHIO.**



Manufacturers of the Celebrated

## KING'S 'QUICK SHOT'

The Strongest, Cleanest and Quickest Trap and Wing Powder Made.

## 'ROYAL' RIFLE POWDER

Always Strong, Clean and Reliable.

## Mining and Blasting Powders.

Send for the third edition of Handy Book for Trap Shooters and Sportsmen. SENT FREE.

THE P. D. & CO. PATENT

## EGG BEATER.

Sure,  
Rapid,  
Effective.

Beats One Egg

IN A TEACUP IN

18 Seconds,

Or Six Eggs

IN A BOWL IN

70 Seconds.

Perfectly Adapted for any Shaped Dish.

PRICE PER MAIL.

30c. each.

Get List From

Paine, Diehl & Co.,  
12 Bank St., Philadelphia, Pa.



HENDERSON BROS.,

MACHINISTS,

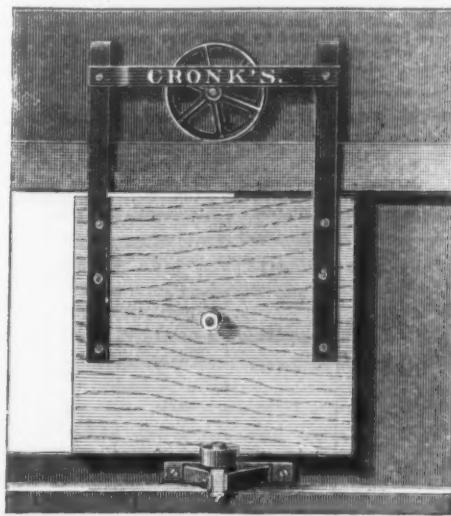
WATERBURY, CONN.,

Manufacturers of

EXHAUST & TUMBLING BARRELS

(Illustrated Catalogue sent on application.)

## WROUGHT IRON. ANTI-FRICTION.



### IT EXCELS ALL OTHERS

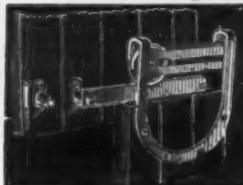
In security of door.  
In ease of motion.  
In simplicity of application.

This Hanger and Iron-Clad Track costs less than others that are not as good, and it sells at sight. Requires no oil. Has no flange wheels. Cannot break or get off the track.

**CRONK HANGER Co.,  
ELMIRA, N. Y.**

### LANE'S PATENT STEEL DOOR HANGER.

The most perfect Anti-Friction Hanger in the Market,



### BECAUSE

It is made of steel throughout, except the wheel which has a steel axle. It will not break. It is practically free from wear. It is almost noiseless. It requires no oil. It has a broad bearing on the door, and keeps in line. It is by far the most durable. It may be used with any track. It is always in order.

### LANE'S PATENT TRACK

Is made of steel and is easily put in position. Catches and holds no snow or ice. Door hung thereon cannot jump the track. Is not subject to decay. Requires no fitting, but is ready at once. May be used with hangers of other manufacture.

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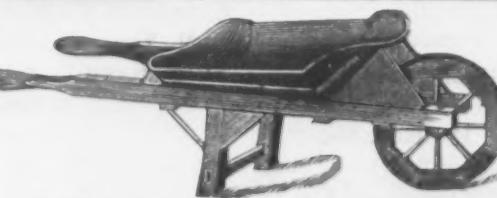
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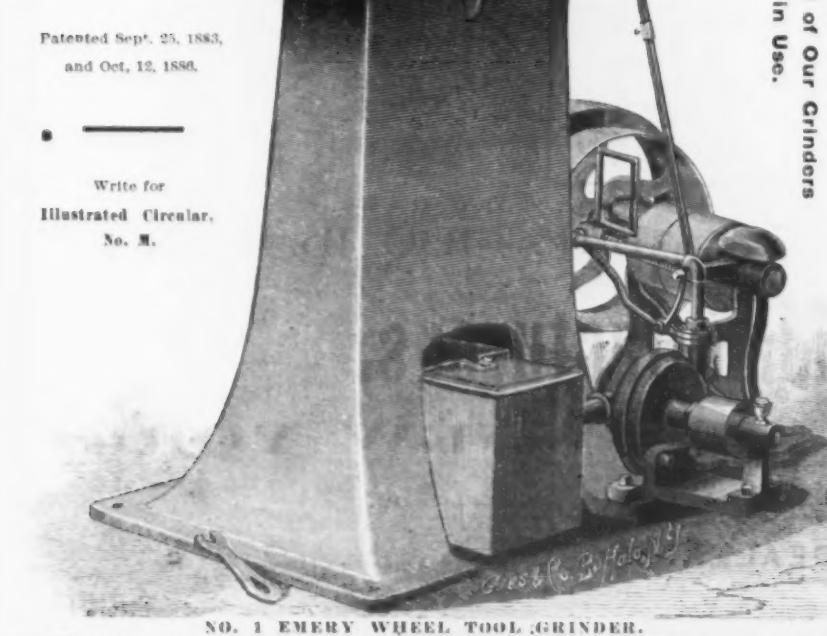
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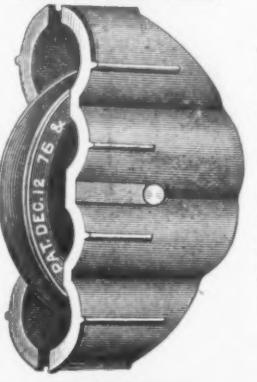
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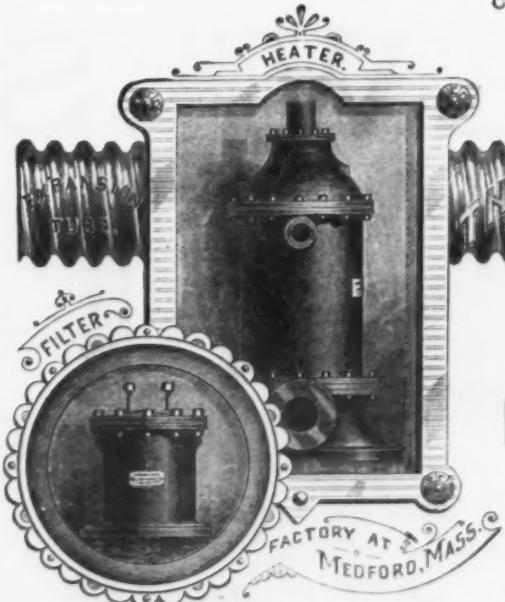


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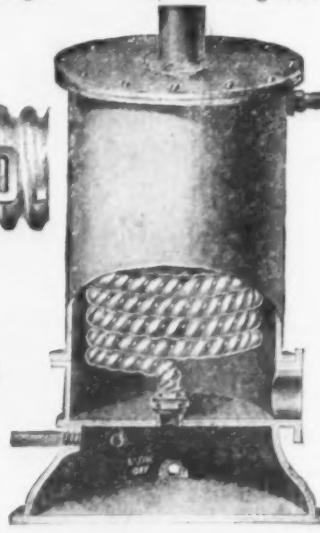
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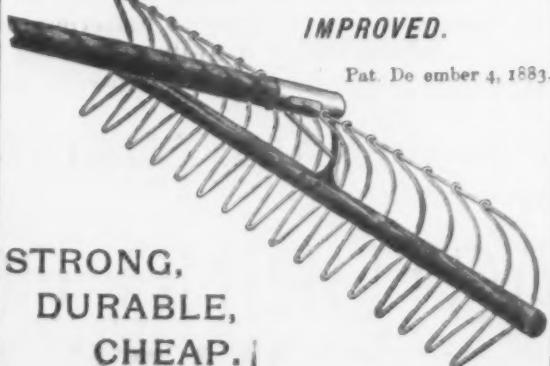
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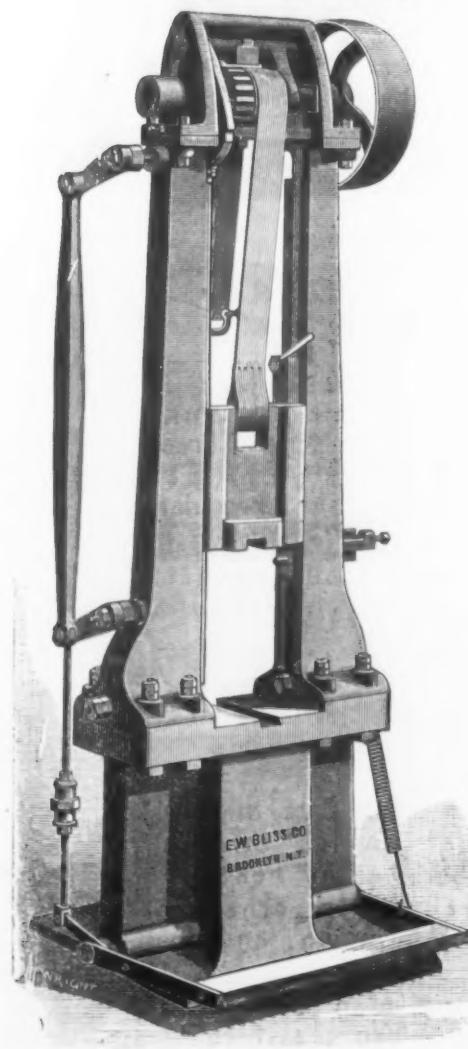
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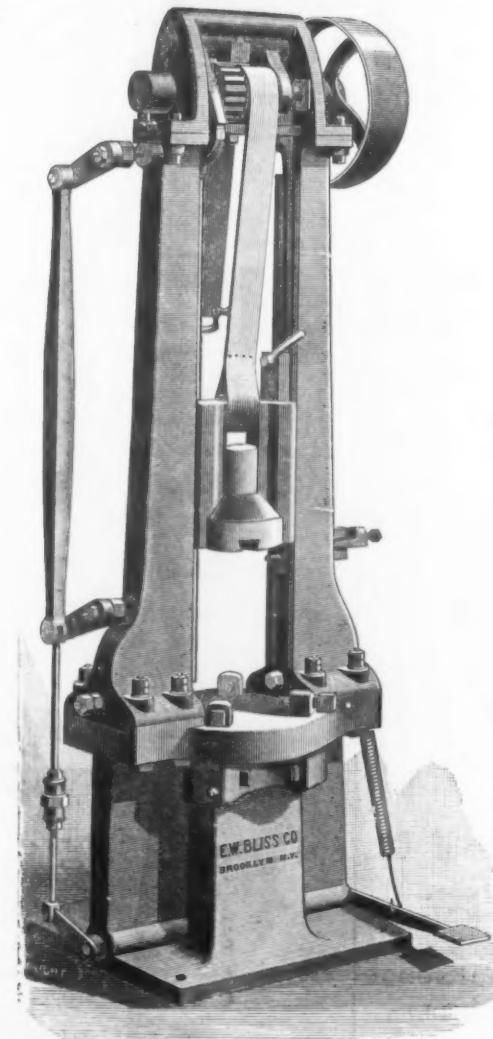
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It is a well-established fact that the COVERT SNAP has been the leading Snap in the market for the past twelve years, and has brought the best prices. To-day the

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We ask your special attention to our new line of Clothes Wringer. An experience of over thirteen years in the manufacture and sale of this class of goods, we believe, enables us to judge correctly of the wants of the trade and the public.

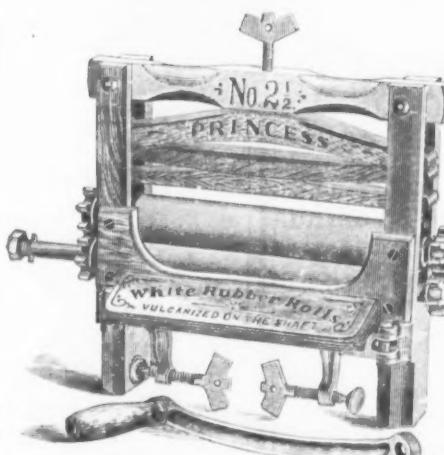
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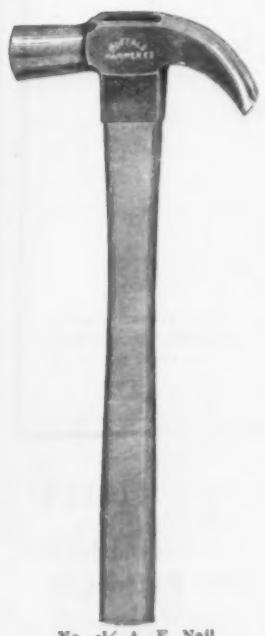
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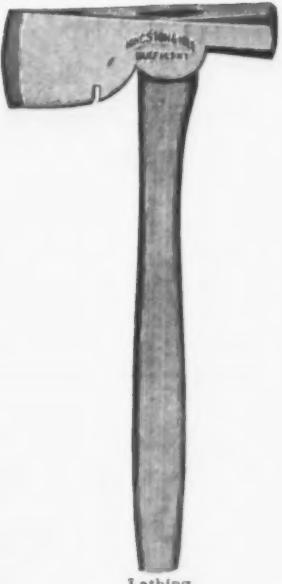
Blacksmith's Sledge.  
Cross Pein.



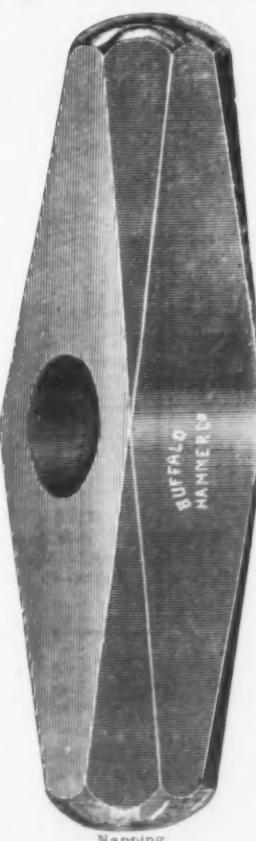
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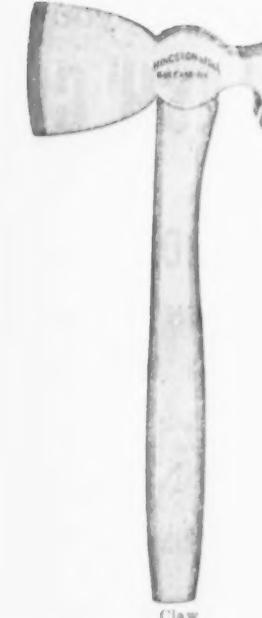
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CHEAP.DURABLE,  
EFFECTIVE

CAN BE APPLIED IN 5 OR 10 MINUTES.

It gives a positive force to the machinery, and increases the power of the belt more than 60 per cent.

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Packed complete with four cartridges and a weight of one ounce.

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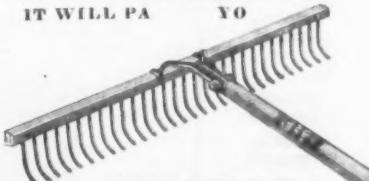
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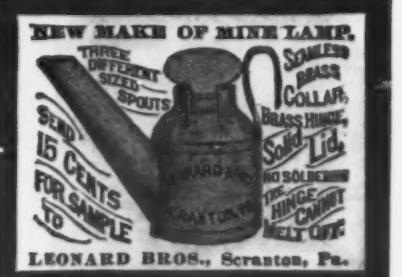
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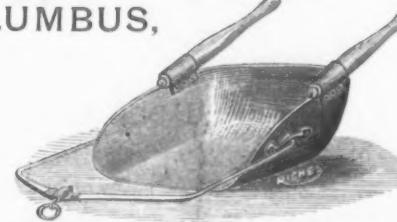
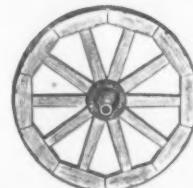
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Our BARKER BRACE is made in 4 grades, and our RATCHET BRACE in 3 grades, the cheapest finish being just as substantial as the best. Send for Catalogue.

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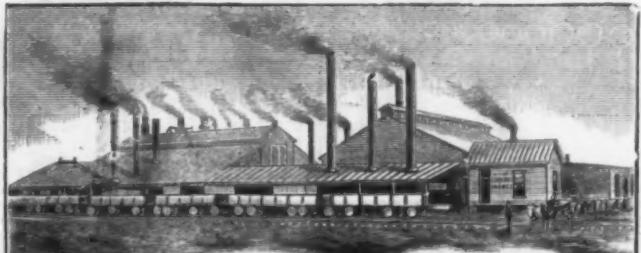
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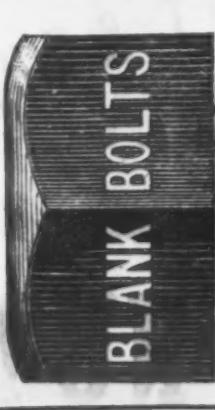
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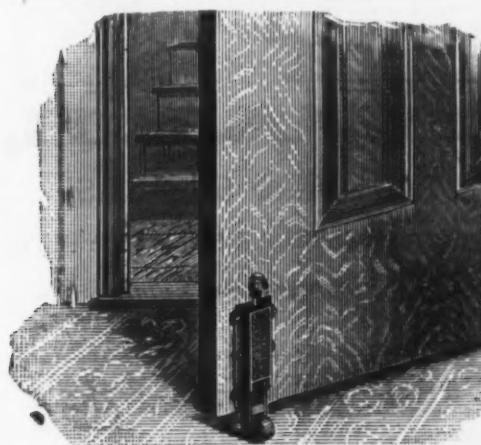


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Coultaus' Patent.

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The door is held in any desired position by the pressure of the roller on the floor, making it a most useful article for dwellings, office-rooms, school-rooms, hotel cars, hospitals, &c., and doing away with the hooks, chains, wedges, bricks, &c., ordinarily used for this purpose. The roller covering to the door does no injury to carpets or oil cloth, and by simply lifting the handle the spring can be thrown out of use when desired. If the holders are required to operate against very strong springs or winds, it should be so stated when ordering.

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**"SELF-ADJUSTER."**



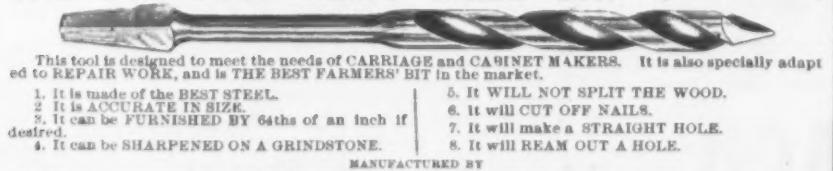
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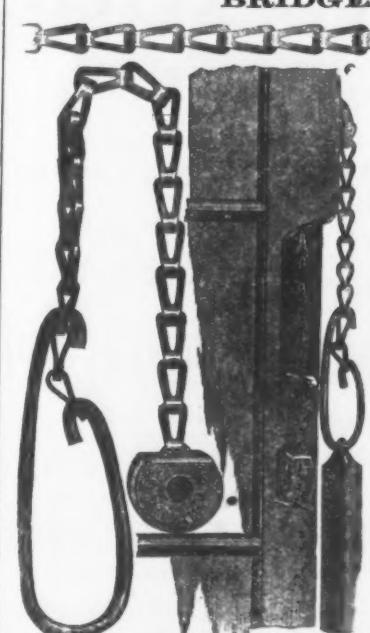
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Centennial Award. Superior in Every Respect. This is one of the best selling locks in the market, and affords the dealer a large profit. It is thoroughly and strongly made—of the best material—very handsome in appearance, and every Lock is warranted. Orders solicited.

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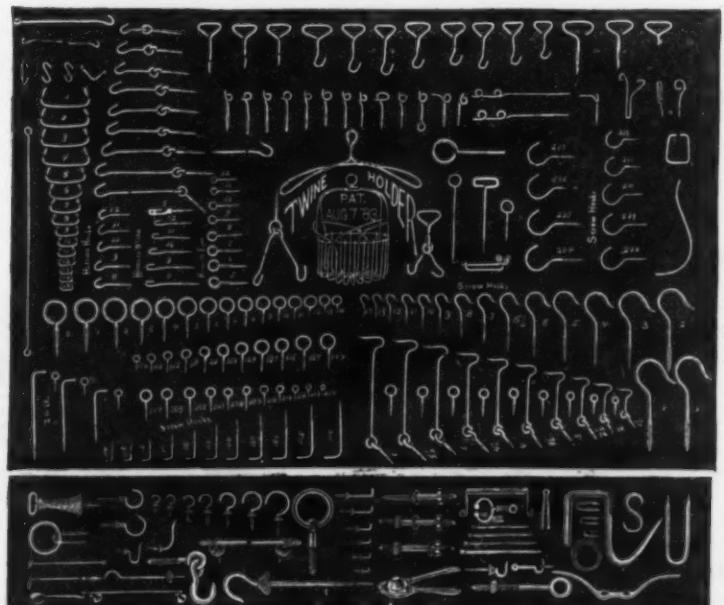
is a substitute for cord in hanging weights to windows. It is manufactured by us only, and by automatic machinery, patented and owned exclusively by ourselves, and whereby it is secured a uniformity of construction and quality. We have been to great expense in producing it, and have, in all the public sales and conditions requisite for making suitable chain for this purpose, and to prevent other chain of the same pattern of link and of the same general appearance, but made from an inferior metal, being offered as the same thing, we patented the word "Giant" as a Trade-Mark, as applied to either metal or chain. Trade-Mark Registered April 16, 1878, and October 22, 1878, and our metal is therefore known in the market as "Giant Metal," and our chain as "Giant Metal Sash Chain."



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All kinds of Bright and Brass  
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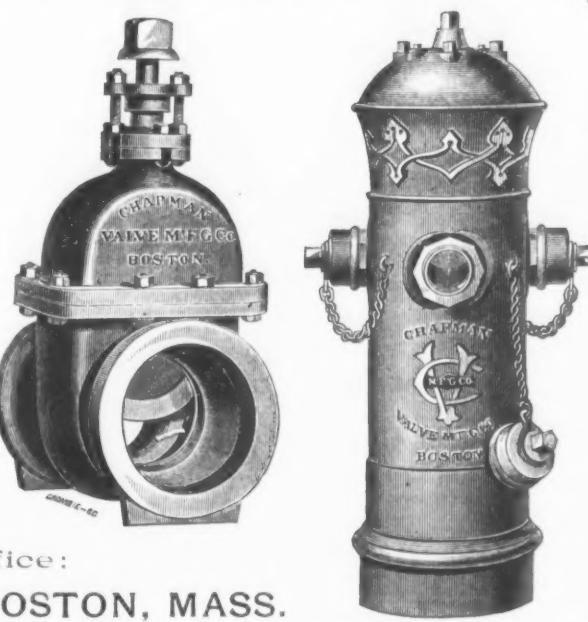
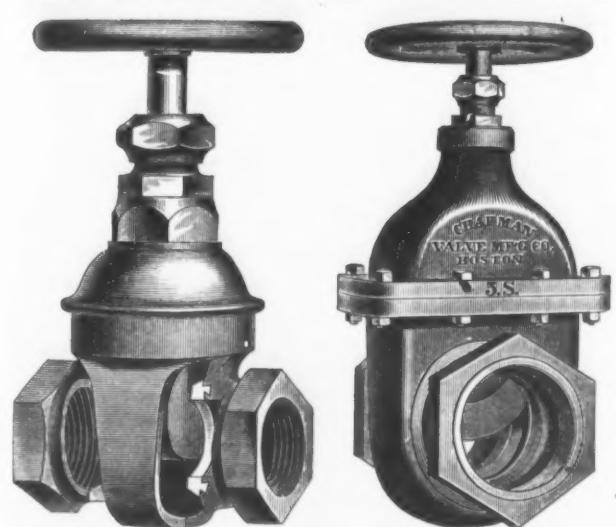
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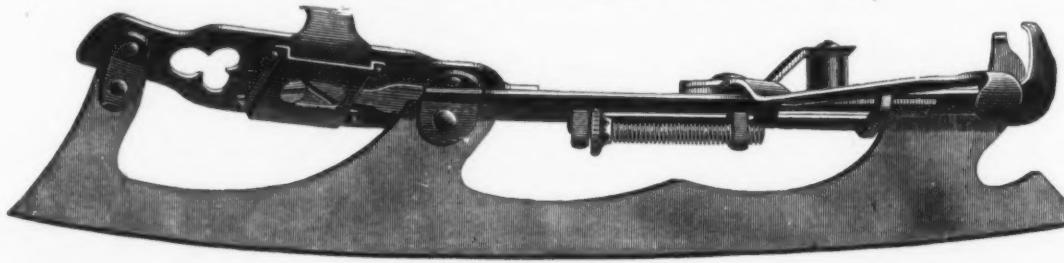
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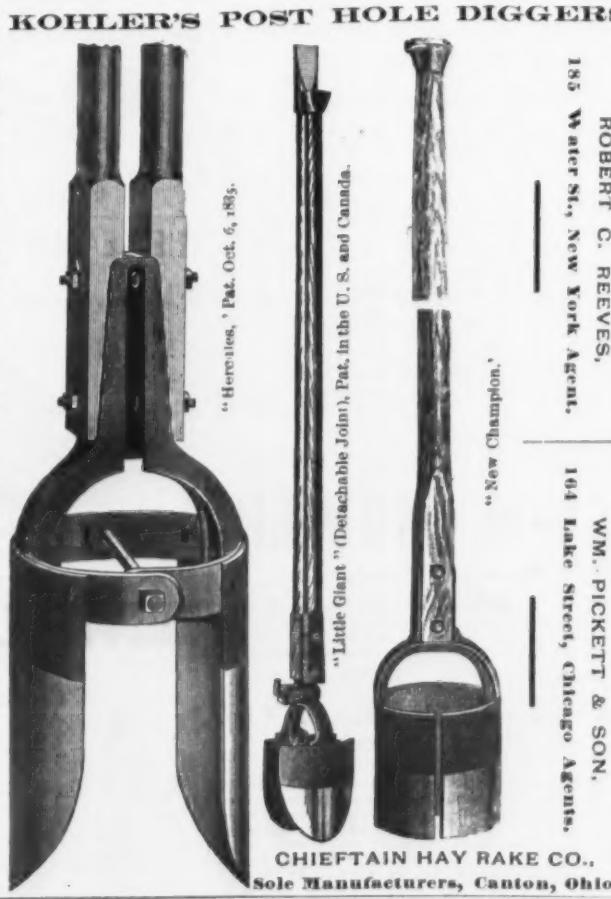
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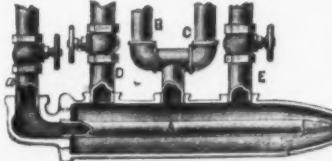
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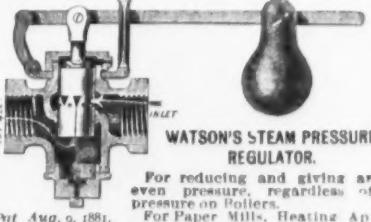


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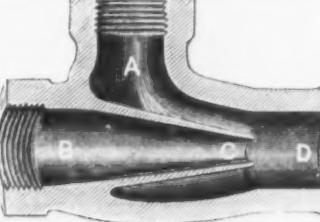
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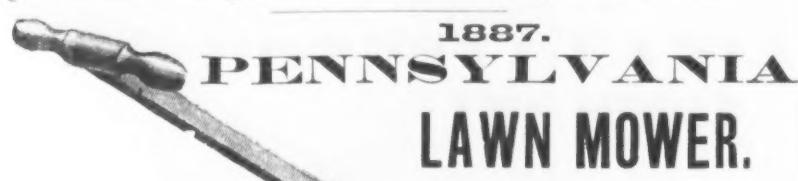
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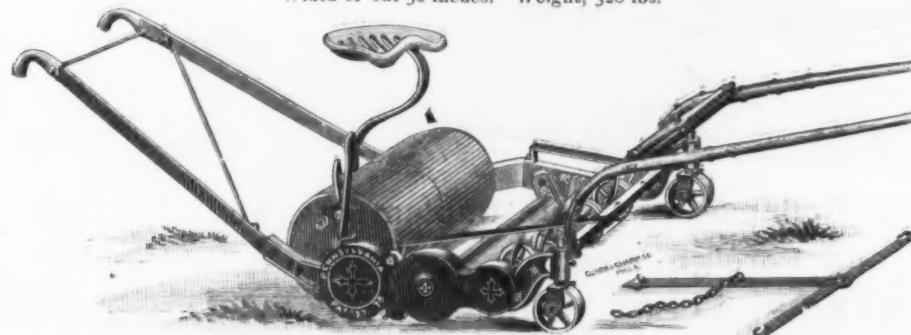
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Showing Mower with Seat and Spring, Shafts and Handles. Draft Irons Detached.

Width of cut 30 inches. Weight, 320 lbs.



Horse Mower, Open Cylinder, 30 inch Cut, with Handles and Draft Irons, \$110.00  
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We recommend the Mower with Draft Irons only. Discount on Horse Mowers is not same as on Hand Mowers.

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The trade will soon find an ordinary and roughly-made Reel of blades and stationary knife is not all that is required to make a perfect Lawn Mower.

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Guaranteed  
Superior to any  
other Center Cut  
MOWER  
on the Market.

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Reduced in Price.

Now, WHY BUY A WORTHLESS MOWER?

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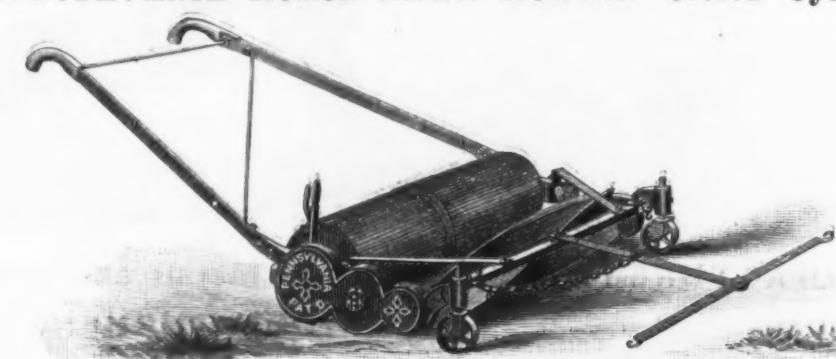
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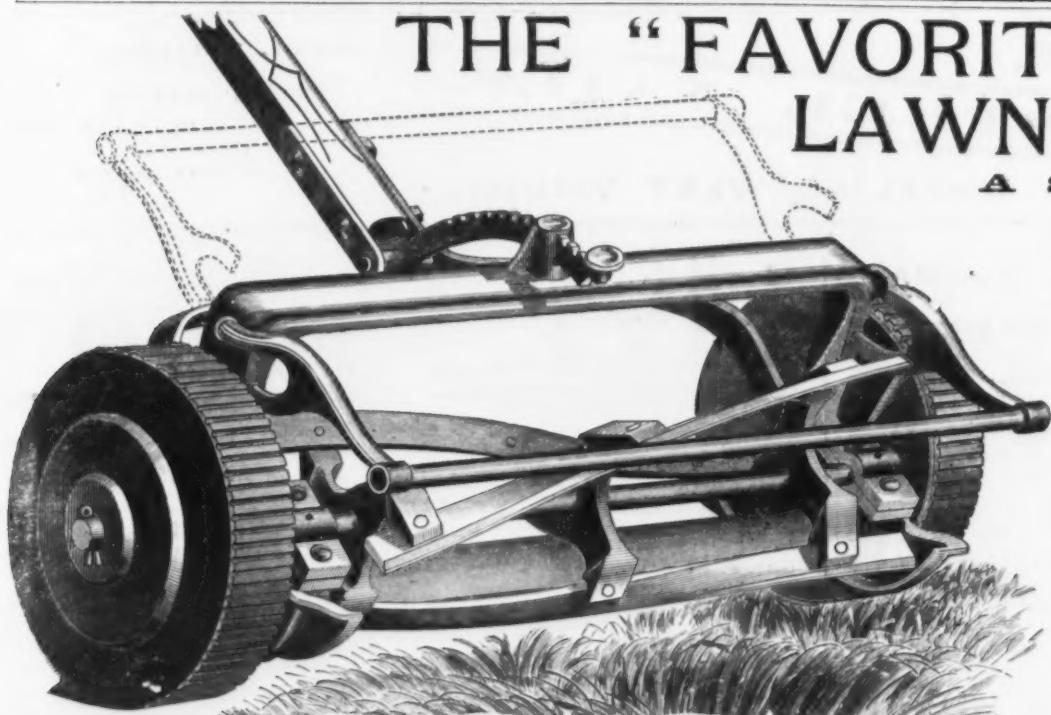
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Horse Mower, Closed Cylinder, 30 inch Cut, with Handles and Draft Irons. Price, \$100.00

Extra for Seat, Spring and Foot Board, \$8.00

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Discount on Horse Mowers is not same as on Hand Mowers.

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The Favorite is handsomely finished in Black and Gold, producing a very novel and attractive appearance. The Favorite runs with greater ease, and more nearly noiseless than any other Mower on the market. In no other Mower can the height of the cutting knives be so readily adjusted to cut from  $\frac{1}{2}$  up to 2 inches, as may be desired, accomplished by means of the segment connecting the handle and the frame. The Favorite is always driven directly from the center; is made with solid frame so that all parts are united together as a single piece; is provided with an adjustable tree guard, which, when desired, can be thrown forward to protect trees or shrubbery from injury, or, when not needed, can be thrown back to lie on the handle. The Favorite will cut grass quicker, closer and easier than any Mower ever introduced to the trade.

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Manufactured by  
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Entirely new methods and devices used.  
Will outwear any three harrows.  
Does the best work with the lightest draft, and no centre ridges.

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IT IS THE ONLY MOWER WITHOUT SPRING OR INTERNAL GEAR.

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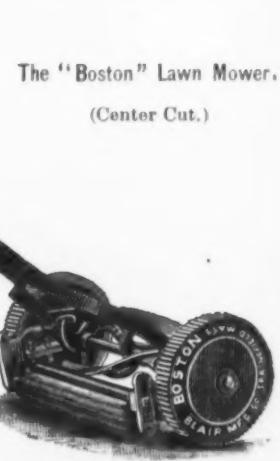
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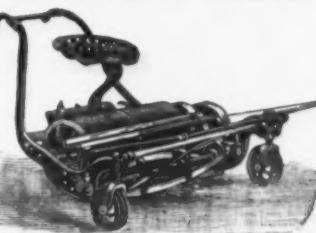
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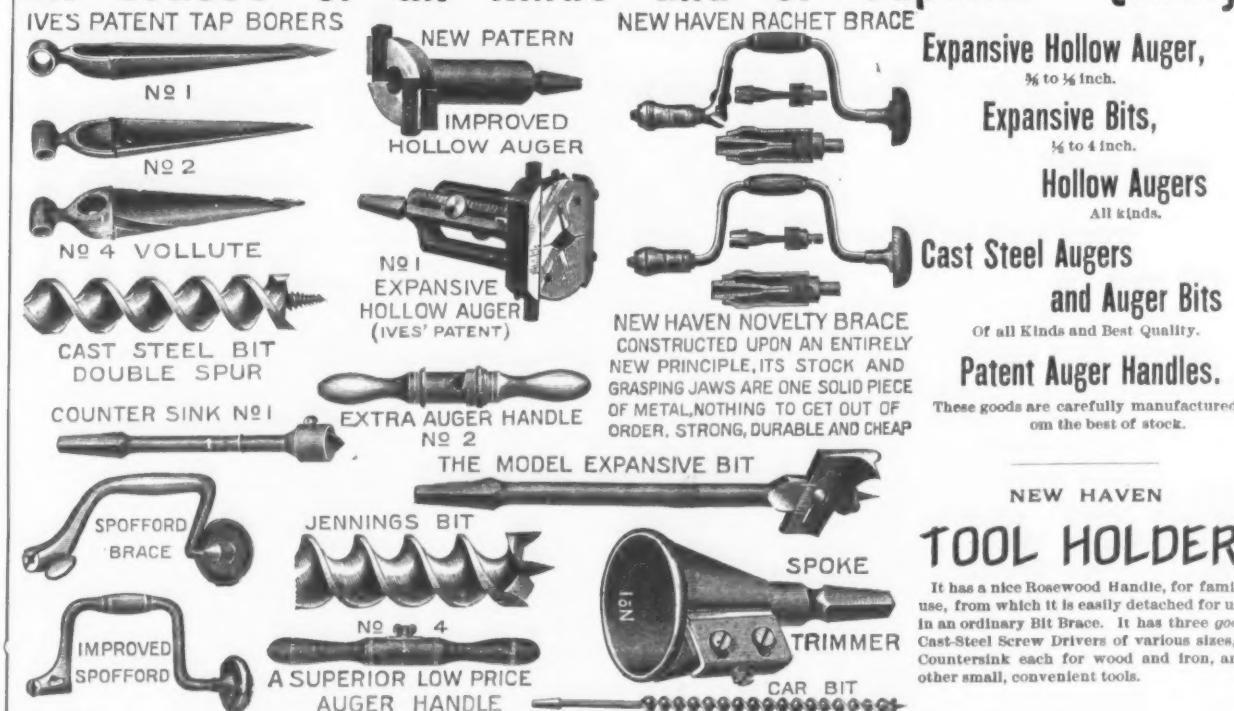
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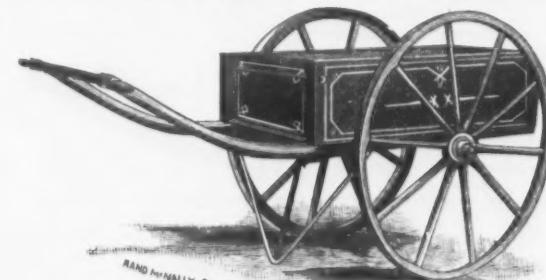
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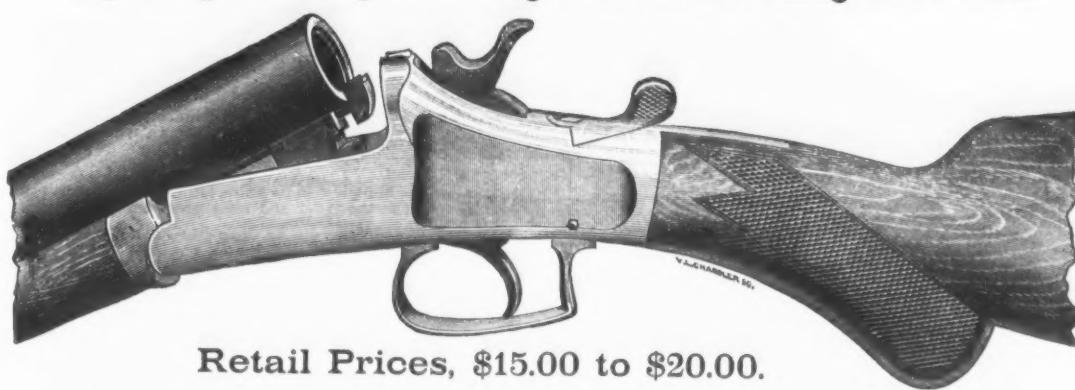
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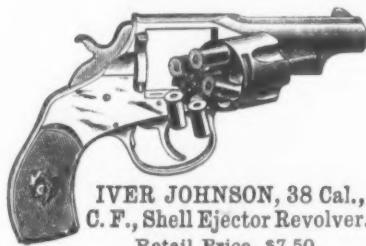
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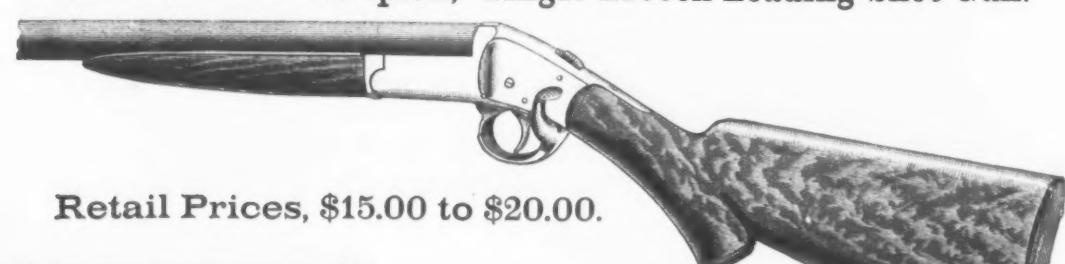
Top Snap "Champion," Single Breech-Loading Shot Gun.



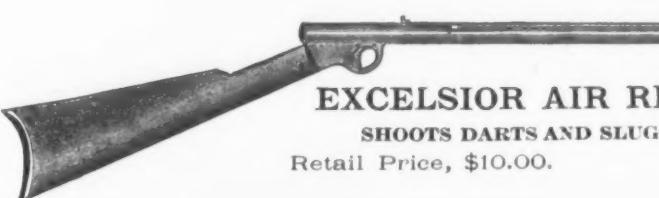
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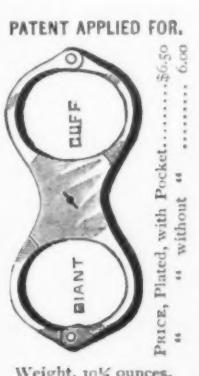
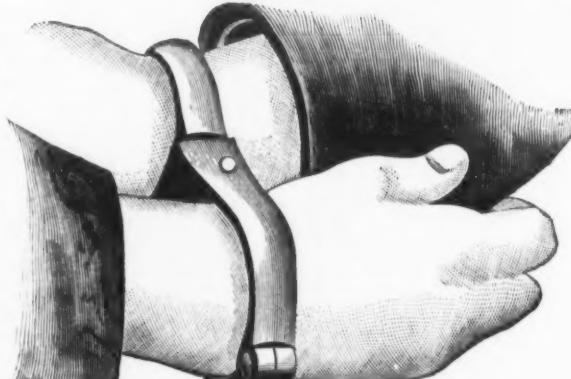
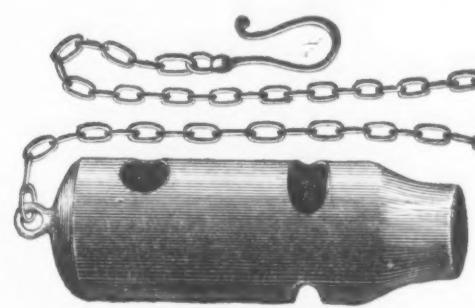
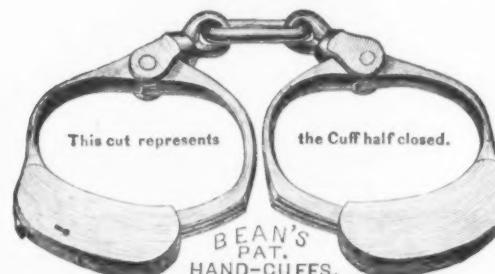
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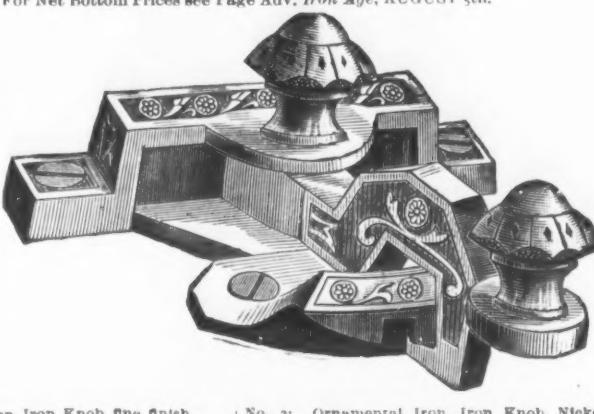
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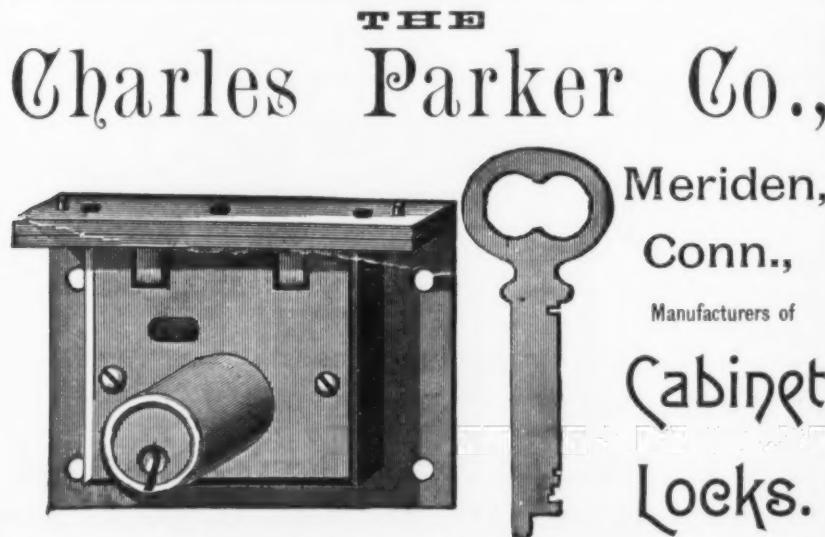
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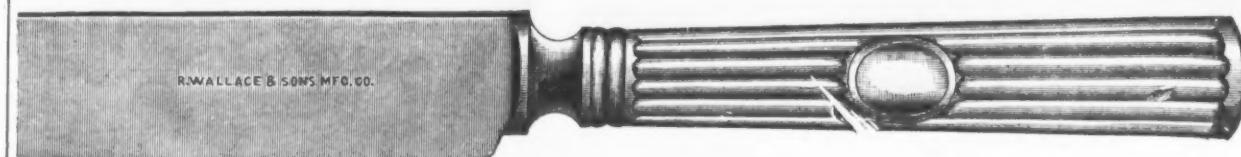
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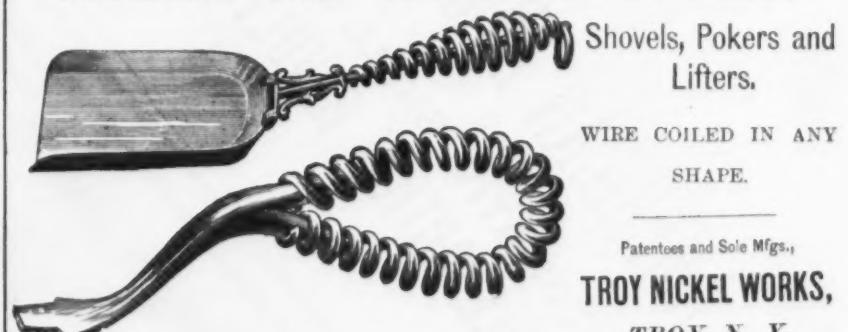
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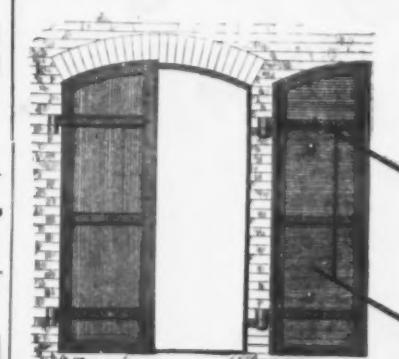
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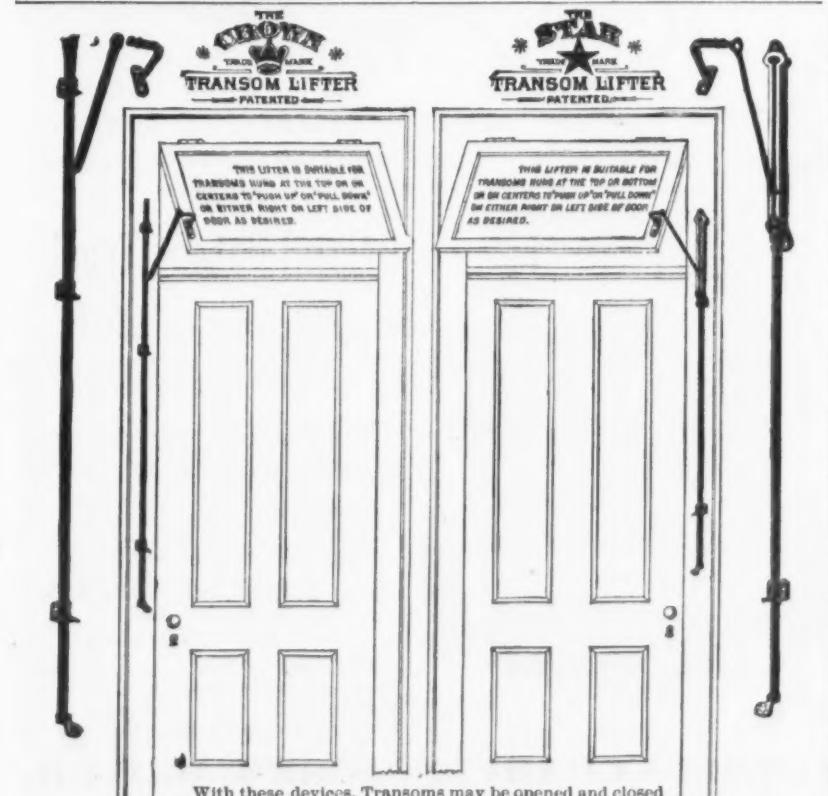
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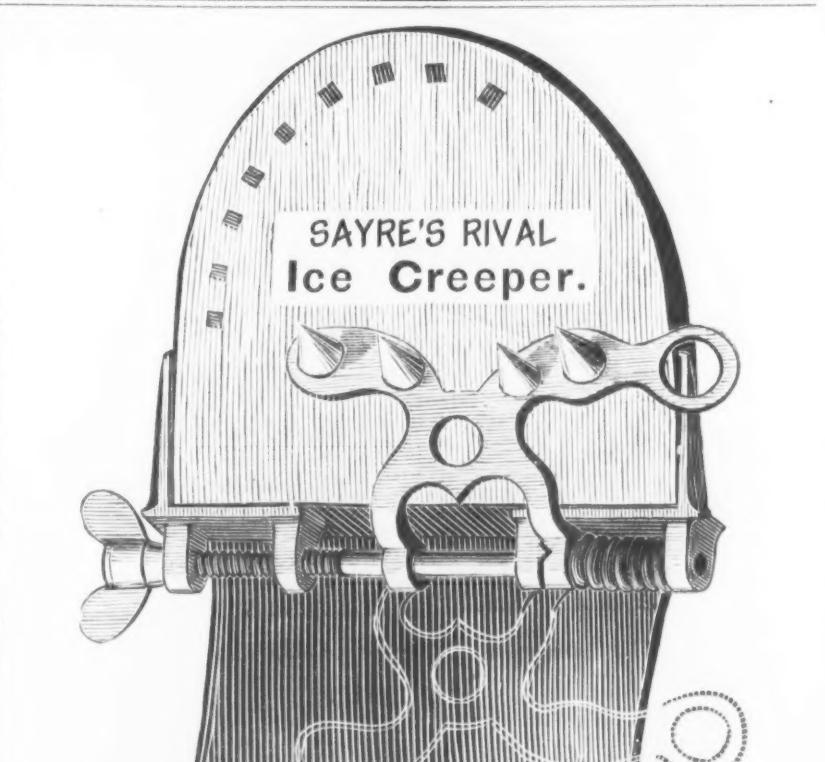
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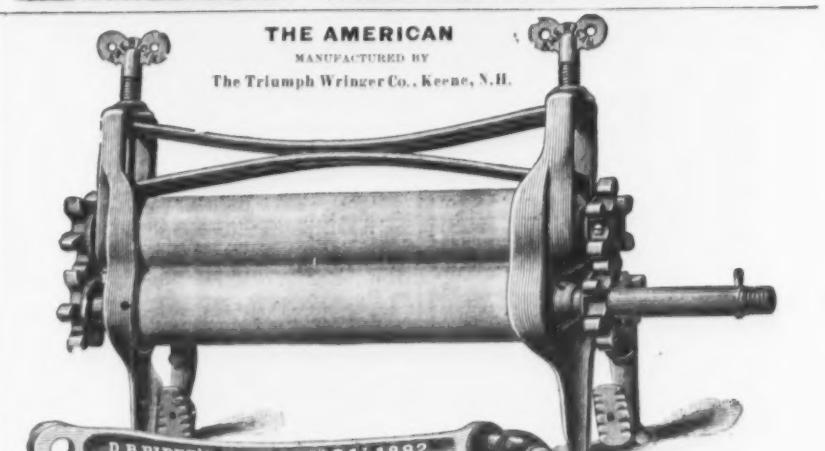
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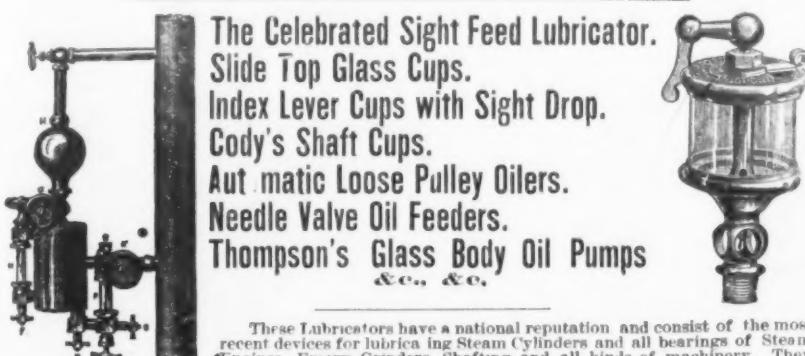
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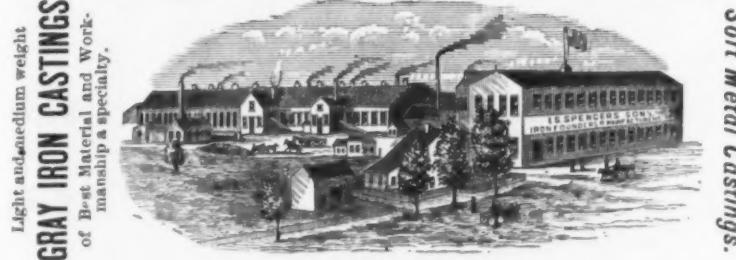
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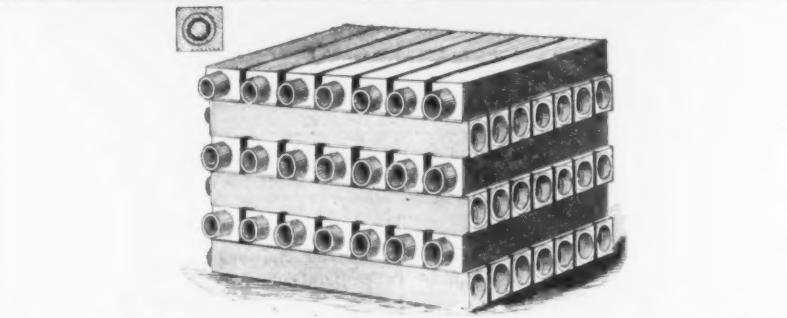
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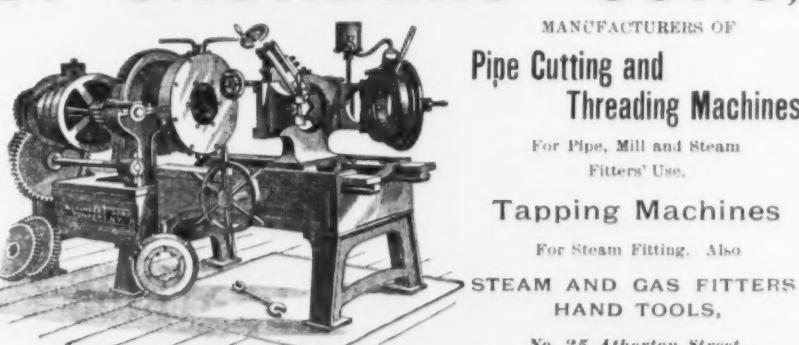
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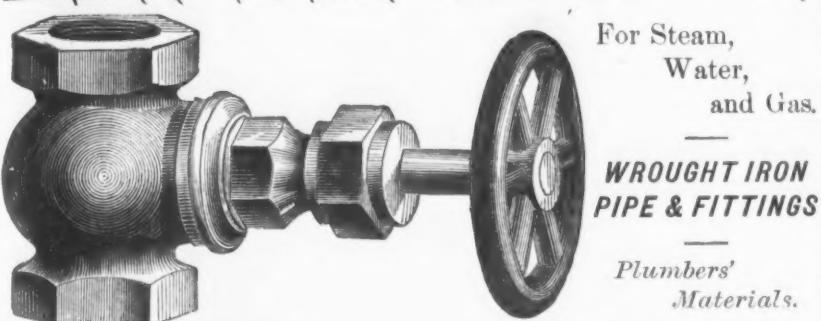
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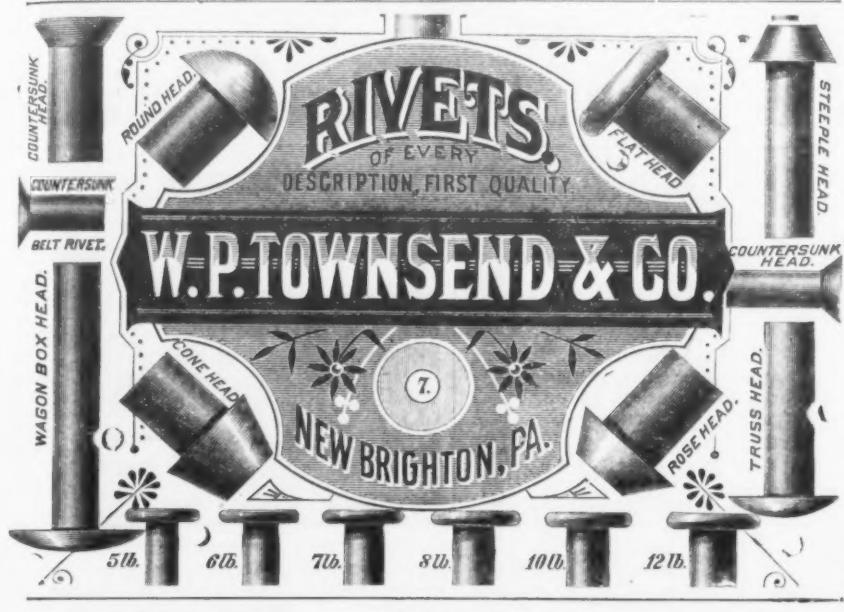
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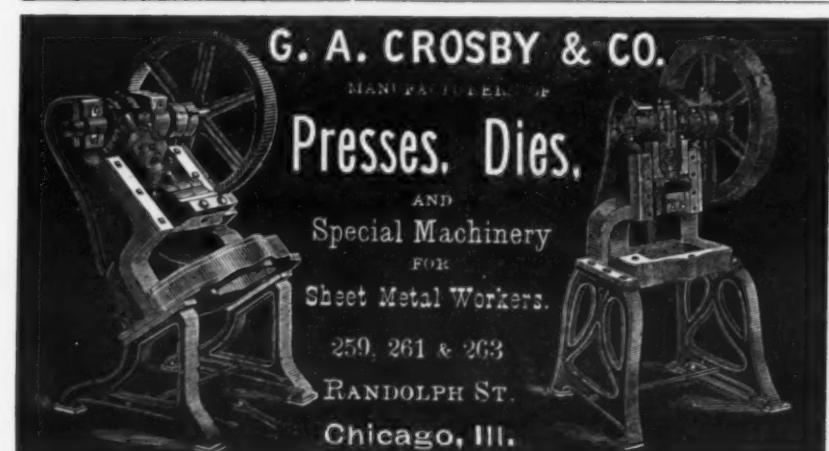
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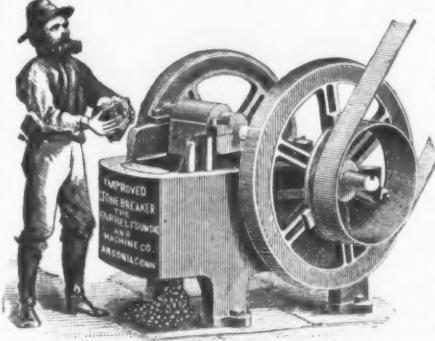
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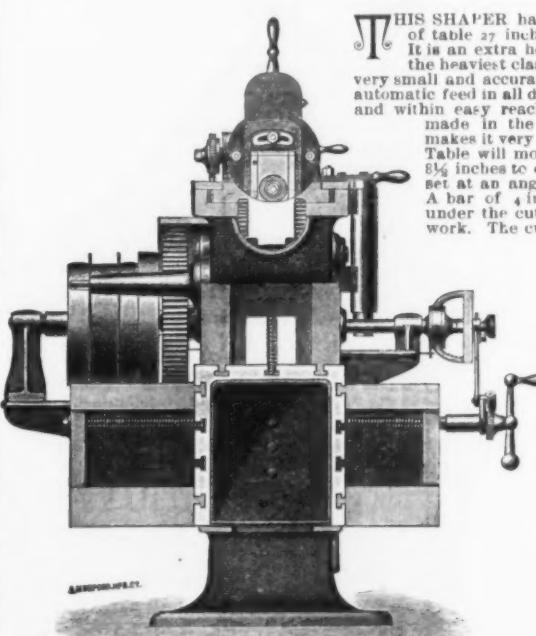
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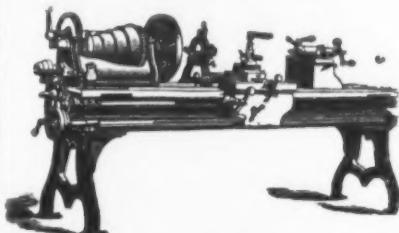
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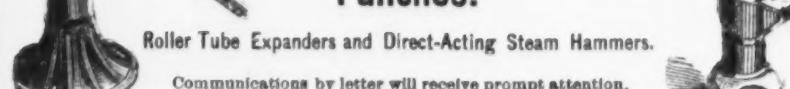
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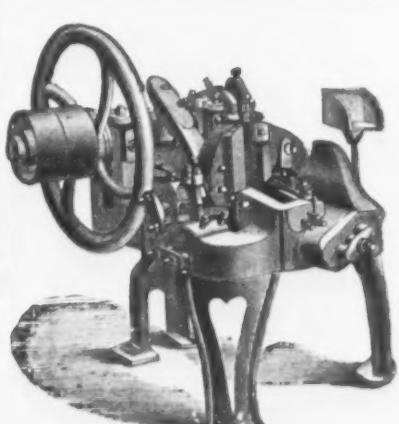
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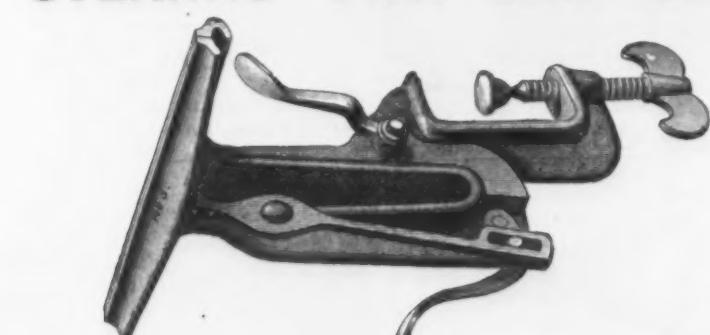
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